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GENERAL NEWS SECTION 1701

THE New York, New Haven & Hartford is to adopt a new form of general statement for its annual revenue and outgo. It will treat the system that it owns as a whole, and the operating results will be consolidated in one statement. Thus a large part of what has heretofore been income from other sources will enter as a factor in the general operation, with the result of greatly increasing the figures on both sides, revenue and expenses. Gross earnings of its large street railway system of some 700 miles in Connecticut, for example, thus will become part of the gross earnings of the parent company, and the same is true of outgo, including fixed charges. The plan has at least one advantage in the direction of publicity and information of stockholders. The company has a number of large subsidiary properties operated as separate corporations, at least one of which, the New England Navigation Company, has been more or less of a fiscal mystery. Some of the corporations have declared full dividends, others have earned dividends, but withheld them, others still have had a considerable surplus over dividends. What may be called suspended dividends represented by surplus really earned on the company's investments have been disguised and with them the resources for future net revenue and the real strength of the corporation in its subsidiaries. The plan has also the value of suggesting the real magnitude of a great railway system hitherto obscured by the "income from other sources" schedule. It may, on the other hand have the drawback of preventing comparison with other years, though on this point criticism may wait until the exact form of statement appears next autumn. While the consolidated statement will be illuminating and suggestive there is nothing to prevent additional clarity by giving the separate statements of the subsidiaries also.

WITH the wage increases of the last eighteen months in the foreground, the question of the standard of maintenance of American railways becomes interesting, and not less so because somewhat obscured. During the ten years from 1901 to 1910 inclusive the cost of maintenance of way structures and equipment in ratio to gross earnings rose from 26.52 per cent. to 28.27 per cent. But of the rise of the last year of full record —1910—which was from 27.76 per cent. to 28.27 per cent., the increase is undoubtedly to be accounted for by the increase of wages which, indeed, probably outran any increased standard. This factor of the raised wage in the maintenance standard shows strikingly in the post-panic year 1908. It was then the highest in ratio—28.83 per cent.—during the last 10 years. But this was because gross earnings fell from $2,589,105,578 in 1907 to $2,421,542,005 in 1908, while maintenance expenditures slightly increased. During the present year, 1911, the situation is such that the figures for maintenance, when they come, ought to be moderately significant. There will probably be an increase of gross earnings. On the other hand, the railway year will express the full impact of the raised *rate* of wages, but modified by reductions of the working force. Roads already in pretty good condition are likely to reduce maintenance somewhat for the same reason that in hard times a man wears a serviceable suit of clothes longer. Nor has the governmental policy been such as to stimulate high maintenance charges—rather the other way. The presumption runs, therefore, in favor of a decline of the actual maintenance standard for the year, though, as in 1910, the higher wage scale may continue to raise the ratio to gross earnings. But the dominant fact of the situation is a transition period in which between wage increase on the one hand and governmental restraint on the other, the real maintenance standard is bound to be considerably disguised.

READERS of this paper twenty years ago will remember the extensive discussion of the use of gas for car lighting which was carried on in our columns. The present generation accepts as facts what were then, in part, unproved theories. In view of the New Jersey public utility commissioners' report on the Martin's Creek derailment, it is well to recall the basic reasons for considering Pintsch gas a safe illuminant. No man can say that any combustible gas released in unconfined space *cannot* under some conditions be ignited. But we can say that in the case of this particular gas the chances are overwhelmingly against it. The pressure under which it is stored in the tanks and connecting pipe lines is such that, at a break, it escapes with sufficient velocity to blow out a torch. This has been proved by test. At such a break it is possible to ignite it only by some such means as a piece of incandescent metal. Furthermore, the combustible mixture of air and this gas is within unusually close limits. The small amount of this illuminant necessarily carried in the tanks of cars will, in case of a break, escape and expand in the atmosphere in two or three minutes; and of that time there is but a narrow zone, only a few seconds, in which even a high temperature will ignite it. There is no evidence of the explosion of Pintsch gas tanks in a wreck;

and it is obviously impossible to have conclusive evidence of the behavior of escaping gas in a wreck. It would require an expert standing alongside of the track watching the train continuously from the moment of the derailment or collision. We have investigated, to the best of our ability, many of the alleged cases of Pintsch gas burning in a wreck, and have never found evidence to support the allegations. In the Martin's Creek wreck the piping was broken in many places. The tanks being under the car, and there being breaks in the piping near the tank, it is not possible to conceive of the gas escaping into a confined space; so there is every reason for believing that the gas was dissipated in the atmosphere so quickly that it had no part in the conflagration.

HENCEFORTH all railway accidents which are fatal to any person must be reported promptly by telegraph to the Interstate Commerce Commission. This is required by an order just issued, dated June 21. According to the preamble, the purpose is to aid the commission in informing itself as to the advisability, in particular cases, of making an investigation; and the order is issued under the authority of section 20 of the Interstate Commerce Law, which empowers the commission to require carriers to file special reports concerning any matters into which it is required by law to inquire. The order is very brief and gives no details, but as that part of the accident law which calls for monthly reports of accidents is limited to those "arising from the operation of the railway" and as the regulations under which the monthly reports are made do not call for the details of accidents where no moving vehicle is involved, it might be presumed that these latter, termed in the regulations "industrial accidents," will not be required. But to follow strictly the letter of the order, it will be necessary to telegraph such cases as a painter falling off the roof of a freight house or a drunken tramp falling through a bridge, should the accident result fatally. Even with the industrials omitted, however, the order will be sufficiently burdensome. In the last annual statistical report of the commission (1909, page 88) the number of trespassers reported killed on the railways was nearly 100 a week, four-fifths of them by being struck by trains or in other accidents similarly devoid of interest from the standpoint of Congressional legislation; so that the number of useless telegrams now required will not be small. As to what details to report by wire, those roads which now telegraph to state commissions will have a guide in the requirements of the state authorities; others will have to use their own judgment. The Indiana commission (which requires telegraphic notice of both fatal and non-fatal injuries) has lately issued a new order (Circular No. 76) calling for increased attention to details, including information as to place, date and hour of any coroner's inquest. Much of this detail must be a useless burden, even in a single state, to say nothing of the territory covered by 240,000 miles of railway.

APPLYING the Supreme Court's "rule of reason," the United States Circuit Court has found that the merger of the Union Pacific and the Southern Pacific does not violate the Sherman anti-trust law. The decision surprised many who were not familiar with the relations existing between these roads, both before and after their merger. The popular notion, we think, has been that before the Union Pacific acquired control of the Southern Pacific, both reached San Francisco on their own rails. But then, as now, the Union Pacific extended only from Kansas City and Omaha to Ogden. The Central Pacific, extending from Ogden to San Francisco, then, as now, belonged to the Southern Pacific Company. The Union Pacific could not reach California without either building a new line there or acquiring the Central Pacific. It could not acquire the Central Pacific except by getting control of the entire Southern Pacific system. Beyond question, Mr. Harriman's chief purpose in obtaining control of the Southern Pacific was to secure for the Union Pacific a permanent connection to San Francisco. In other words, it was a merger chiefly of connecting, not of competing roads. Both lines handled through traffic originating in the east and destined to California, and vice versa, but the Union Pacific could not get it to California except in conjunction with the Southern Pacific. Therefore, for the Union Pacific really to compete with the Southern Pacific, the latter had to compete with itself. Anyone who will look at a map of the two roads will readily see why there could be no local competition between them. The attorneys for the government pointed out that the Union Pacific, through its control of the Oregon Short Line and the Oregon Railroad & Navigation Company—now the Oregon-Washington Railroad & Navigation Company—reached Portland, as did the Southern Pacific, on its own rails, and contended that the effect of the combination was to stifle competition to and from Portland, and also to and from San Francisco, between which point and Portland business moved by boat. The testimony showed, however, that the Union Pacific's competition with the Southern Pacific by this indirect route for San Francisco business was largely mythical. The combination did not result in advances in rates or deterioration in service. The physical condition of and the service rendered by the Harriman Lines are vastly superior now to what they were ten years ago. It is difficult to see, therefore, how any court could find that the merger was in "unreasonable" restraint of trade. The decision, even if upheld by the Supreme Court, will not establish a precedent which will certainly protect other railway combinations. The merger of the Harriman lines was perhaps more conclusively defensible than almost any other merger of roads that could be called parallel that has ever been effected. The Rock Island-Frisco combination, for example, would have been much more vulnerable. The decision merely means that the union of the Harriman Lines probably will not be dissolved and not that any other merger of parallel lines is safe from attack.

THE COST OF RAIL AND WATER TRANSPORTATION.

WE give in another column a letter from S. A. Thompson, field secretary of the National Rivers & Harbors Congress, on the subject of the relative costs of transportation by rail and by water. Mr. Thompson's letter is a reply to one by Mr. Moulton, of the University of Chicago, which was published in the *Railway Age Gazette* of June 2.

Mr. Moulton in his communication brought out clearly the point that the fundamental question that ought to be settled before the government of the United States engages in extensive development of inland waterways is whether the *total* cost of transportation on such waterways is, or probably can be made, less than the total cost of transportation by rail is, or can be made. The rate that the shipper pays to the railway, as he indicated, covers the total cost of transportation by rail. The rate that the shipper pays to the owner of a boat covers only a return on the investment in, and the operating expenses of the boat. To arrive at the total cost of water transportation there must be added to this expense what the public pays in taxes for the development and maintenance of the waterway. Therefore, as Mr. Moulton said, comparison between the *rates* paid by rail and by water gives no clue to the relative *costs* of transportation by rail and by water.

We have never known an advocate of the development of inland waterways who would meet the issue squarely and try to show that the total cost of transportation on canals or canalized rivers is, or can be made, less than the total cost of rail transportation. Mr. Thompson is no exception to the rule. Like all the rest, he dodges the real issue. He starts off by making comparisons between rates by rail and by the Great Lakes on coal. He compares the rate on coal per ton per mile on the Chesapeake & Ohio with that on the Great Lakes from Buffalo to Duluth, without giving any consideration to the fact that the haul from Buffalo to Duluth is vastly longer than the haul on the Chesapeake & Ohio, and that the water rate ordinarily is made to secure a back haul for boats which otherwise would move with very small lading. Furthermore, he gives no con-

sideration to the fact that the haul by lake is very circuitous, which makes the distance the coal moves very much greater than the distance would be as the crow flies, and makes the average rate *per ton per mile* very much lower in proportion than is the *absolute* rate from the point of origin to destination. Almost exactly the same criticism may be made of his comparisons between the rates by rail and water on iron ore from Lake Superior to the Pittsburgh district.

Replying to Mr. Moulton's perfectly just statement, that a comparison between rates by rail and via the Great Lakes is unfair, because, "the Great Lakes constitute a highway ready made by nature," Mr. Thompson says that in the development of the Lakes there has been spent about $130,000,000, and that he is "not able to see that a highway which has required the expenditure of $130,000,000 is any more entitled to be called a highway 'ready made by nature,' than a railway on which a similar sum had been expended." Everybody but Mr. Thompson can readily see what he says he cannot see. Before a dollar of this money was spent the lakes were a great highway capable of accommodating, and actually accommodating, a heavy traffic; and by this relatively small expenditure, which would not build more, perhaps, than 1,500 miles of double track railway, without equipment, they have been enabled to handle a traffic one-third as great as that of all the railways of the United States, and rendered capable of handling a very much larger traffic. Men build railways outright; what they have done to make a highway of the lakes is incomparably smaller than what nature has done. Furthermore, it will be noted, Mr. Thompson does not include a return on this $130,000,000 in his figures regarding the cost of transportation on the lakes.

Continuing, Mr. Thompson says that if the cost of developing and maintaining a waterway is to be included in the cost of water transportation, the expenditures which the people have made for the development of railways should be included in the cost of rail transportation. He then refers to the donations of cash and gifts of land that have been made by the public to secure the construction of railways, and toward the end of his article says: "The people of the United States have given outright to the railways property and franchises worth about $2,500,000,000." The *Railway Age Gazette* does not believe that the public has given to the railways property and franchises which approached $2,500,000,000 in value at the time that they were given, or which can be shown to approach it now. It is a common thing for advocates of waterway development and other persons who desire to injure the railways for their own benefit to make sweeping statements of this sort, which they know they cannot prove. We believe this is what Mr. Thompson has done in this case, and we ask him to bring in a bill of particulars listing the property and franchises worth $2,500,000,000, which the railways have been given, with the value of each. The columns of the *Railway Age Gazette* are open to him to prove his assertion.

If in the cost of railway transportation we should include the value of all the property and franchises that have been given by the public to railways, we should include all similar items in the cost of water transportation. In their earlier history the various canals, like the railways at a later date, were the recipients of large donations of land and franchises. Bourne in his "History of the Surplus Revenue of 1837," refers to the fact that four million acres of land even at that early date had been granted to canals or in aid of canal construction. Furthermore, there should be included all that has been spent not only on waterways now in use, but on those that have been abandoned. The expenditures on canals which had been abandoned up to 1906 amounted to $73,168,795; and the total expenditure by the United States government on inland waterways alone, exclusive of the Great Lakes, had been almost $216,000,000.

Mr. Thompson referes to the fact that tolls on the Erie canal, up to the time they were abolished in 1882, covered the cost of construction, maintenance, operation, etc., and yielded a large profit. He conveniently ignores the fact that practically all of this was done before the canal had to meet the competition of the railways, and when it was charging rates that would make the modern railway man turn green with envy. The canal was finished in 1825. At first its rates were very high. A 40 per cent. reduction was made in 1834. In spite of considerable further reductions the canal fund grew so rapidly that in 1845 its managers were buying up their bonds at 20 per cent. premium. Dr. Hadley says in his "Railroad Transportation," page 30; "In 1852-3 the tolls per ton per mile were only about one-third their original figures; the revenue was over $3,000,000 in each year. From that time forward begins the history of the contest between the canal and railway. The use of the canal continued to increase; its receipts at one time also increased largely; but its commercial power slowly diminished. From 1853 to 1859 there was a fight for supremacy between canal and railway. For twelve years there was a contest for profits. Then it became a question whether the canal could pay expenses of maintenance, a question which was finally decided in the negative." "The complete abolition of tolls on the canal," Dr. Hadley adds (page 98), "was almost a matter of necessity, and when it came it did not suffice to protect the canal business in the face of a renewed railway war." In other words, the Erie canal twenty-nine years ago became unable to withstand railway competition. Mr. Thompson commends the action of the people of New York in voting $101,000,000 to construct a new and larger canal, and says: "I may add, in my judgment, they would have been much wiser if they had voted a sufficient sum to build a very much larger canal than the one now under construction." The people of New York chose to employ Col. Thomas W. Symons, of the Corps of Engineers of the United States Army to advise them on this matter, and in a report in 1897 on the proposed deepening of the canal, he estimated that the *cost to the shipper* of transporting wheat in a lake freighter of 7,000 tons capacity on a ship canal would be 38 per cent. greater than with a tow boat and barges on a barge canal. This took no account of the fact that the estimated cost to the public of building the ship canal would be four times as great as that of building the barge canal. Mr. Thompson's judgment on this subject does not weigh heavily in the balances against that of Col. Symons. It was this report of Col. Symons that caused the people of New York to decide to dig a barge canal 9 ft. deep.

Mr. Thompson says several nations of Europe which have had experience in the matter covering forty years or more are continually putting more and more money into the improvement of waterways and turning them over for the free use of the public in competition with state owned and state operated railways which constitute the principal source of national revenue. This is another of his sweeping statements which have but slight foundation in fact. The only country in Europe whose state-owned railways yield a large amount of revenue to the government are those of Germany. While he was on this part of the subject he might have given some figures about the cost of transportation on these European waterways to which he refers; for transportation on the canals and canalized rivers of Europe is much more nearly analogous to what transportation would be on canals and canalized rivers in the United States than is transportation on our Great Lakes. On the Rhone in France, according to the British Royal Commission, the rates vary from 7.8 mills to 15.6 mills per ton per mile; on the Seine from 26 to 56 mills; on the Canals du Centre and du Midi from 6.2 to 7.8 mills; and on the canals in the northeast and east of France from 3.8 to 4.6 mills. The average rate on a wide variety of commodities moving to Paris, where the traffic is very heavy, is 5.78 mills. The figures given by the British Royal Commission indicate that the average rate per ton per mile on all the waterways of France is certainly not less than 6 mills; on the waterways of Germany about 5 mills; and on the Belgium waterways about 6.5 mills. The expenditures of the French government for the maintenance of canals and improved rivers, and for interest on the money laid out in their development, amount to 4 mills per ton per mile for all the water-borne traffic. The similar expenditure in Belgium amounts to 4.6 mills, and in Germany

to eight and one-half tenths of a mill, including the Rhine and the Elbe, on which the traffic is very large, and excluding them, to 2 mills per ton per mile. This makes the *total* average cost of water transportation in France 10 mills per ton per mile; in Germany 6 mills; and in Belgium 11 mills. The average railway rate per ton per mile in the United States is 7.63 mills. The foregoing figures may, perhaps, indicate why Mr. Thompson prefers to compare the freight rates of the Great Lakes with railway rates, rather than the rates on canals and canalized rivers with those of railways.

Mr. Thompson concludes with a reference to the fact that the American public has spent large sums on the improvement of streets and roads. He asks, "Who shall deny them the right to make similar expenditures on waterways?" and says that "the experience of other nations shows that such an expenditure would be one of the wisest and most profitable that the people of the United States could make." Nobody that we have ever heard of denies the right of the American people to tax themselves for any purpose that they may please. The question is not whether they have a right to tax themselves to develop waterways, but whether it is expedient for them to do so. It is not true, as Mr. Thompson asserts, that the experience of other nations shows that expenditures by the people of the United States for the development of rivers and canals would be either wise or profitable. That the rivers and canals of European countries have been able to compete successfully with the railways, while those of the United States have not been able to do so, has been mainly due to the circumstance that railway rates in Europe are much higher than they are in the United States and that the governments have refused to allow the railways to so reduce their rates as to attract traffic from the waterways. As has been repeatedly shown, the rivers and canals of the United States are today in as good shape to handle a large traffic as are those of Europe. If the government of the United States would compel the railways in this country to raise and maintain on a higher basis their rates at points where they meet the competition of rivers and canals, the latter would be enabled effectively to compete. There seems no other way of enabling them to do so. If the people of the country desire water transportation more than they do cheap transportation they may decide to adopt this policy; but so long as they are not so anxious to have their goods moved by water that they will be willing to pay more for the privilege than they have to pay for rail transportation, it is probable that the canals and rivers of the United States will be unable to compete with its railways.

NEW BOOKS.

Formula for Scientific Freight Train Rating. By D. C. Cheney, 1368 Fullerton avenue, Chicago. Cannon Printing Co., Milwaukee, Wis. Cloth, 4 in. x 8 in. Price, $1.50.

Operating men agree that trains either overloaded or under loaded are expensive, and that the nearer the total train resistance is to the available tractive power of the engine the more economically is a train handled. This resistance varies with different trains, depending on the temperature, the direction of the wind, the number of cars and the weight of the train. In making up tonnage ratings arbitrary reductions are made for low temperatures, head or side winds and the number of cars, for it is recognized that the resistance is much higher per ton for an empty car than for a loaded one.

The author of this book has worked out values for the resistance of cars of all weights from 10 to 78 tons on grades varying from level to 1 per cent., in pounds per ton, and in tractive power required per car from data secured in recent dynamometer tests. From this table a tonnage rating chart can be quickly made up for any ruling grade for all weights of cars. In making up tonnage trains the resistance of the various cars taken from this chart is added up until the tractive power of the engine is reached, instead of adding up the weight in this way taking care of accurately instead of by an arbitrary rule the varying resistance of empty and loaded cars.

Letters to the Editor.

SOME RAILWAY ORGANIZATION NEEDS AT THE BOTTOM.

Palestine, Texas, June 20, 1911.

To the Editor of the Railway Age Gazette:

Mr. Acworth's recent remarks on the need for decentralization of authority on American railways were widely copied and commented on in the press throughout the country. I also noticed an interview with Major Charles Hine in the daily newspapers recently in which he said, among other things: "The top and not the bottom is where modern reorganization is needed." Any remarks by such eminent authorities will naturally attract more than passing notice, and I will not take issue with either because I have the greatest respect for the opinion of both and frankly admit I do not know much about the top.

I shall therefore refrain from presuming to offer an opinion as to what is needed up there. But I have had quite a varied experience along the bottom of the organization in the operating departments of several railways, both large and small and both departmental and divisional, and it occurs to me some changes at the bottom are now needed and will soon become more necessary, to meet changed conditions.

I favor the divisional plan of organization, but I do not believe that the superintendent can be the general manager of his division and personally handle the details in connection with operating trains, engine performance, maintenance, etc. It is true, he is provided with assistants, including one or more train masters, a master mechanic, a division engineer, etc., but these assistants are rarely, if ever, given sufficient authority to get the best results. I believe the one thing needed on American railways today is a strong, broad-minded, capable superintendent on each division in full charge of all departments, whose duties shall be to outline the policy of his assistants, keep general supervision over the division and a close check on unit costs, arbitrate and smooth out any friction or differences between the heads of the several departments and see that all work together to the best interests of the railway as a whole. He should also cultivate the acquaintance of the town, city, county and state officers and of the prominent shippers and business men on his division and (with apology for the slang phrase) get the road back "in right" with the people.

Give him a master mechanic in charge of the round houses, a division engineer in charge of maintenance of way and a train master on each freight district in charge of the despatchers, operators, agents, yard, train and enginemen. These division officers should maintain discipline and be responsible to the superintendent for the men on their respective payrolls. These men should report to and receive their instructions from their immediate superiors. Each officer's authority should be clearly defined, so all will understand alike, and no one should be permitted to go over any one else's head, nor should any one be allowed to go under any one else's head. The practice of going over or under the man directly in charge of the men, who ought to be responsible for results; and two, three or four different officers giving the same men different and conflicting instructions, has done more to break down discipline and bring about unsatisfactory operating results than any other one thing, with the single exception of the rule of seniority; and as seniority is here to stay, and as most railway men are fully conversant with the causes that brought it about, I shall not discuss that here. The standard rules practically outline such an organization for the transportation department now; but I do not think it is carried out in actual practice on any railway.

With such an organization as I have outlined, the officer in actual charge would be clothed with authority and could get close to and know the men working under him. He could educate those capable and receptive and if his policy were wise, he would take care of the good men and gradually weed out the unsafe ones. He must be right all the time and the good men

will recognize the justice of his discipline and line up with him—something not to be despised, because when the good men are right with the officer in charge, they will give him valuable information that he can get in no other way. Then the bad men have either got to get in line or move; they usually prefer the former. Moreover, if the several divisions of a railway were so organized and run, the rank and file would know who they were working under and what was expected of them. It would promote harmony and discipline, division matters would be taken care of on the division and the men at the top would then have more time to look after the really big things.

J. O. KELLY,
Trainmaster, International & Great Northern.

THE PURCHASING AGENT WHO KNOWS.

CHICAGO, June 17, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In the chapter of Mr. Pearce's able and interesting work on the supply department, which is devoted to Duties of Officers he unintentionally exposes one of the weak points in the present-day railway organization when he touches on the qualifications of the purchasing agent.

He reflects correctly the idea, which is all too frequently accepted, that a man may be a good purchasing agent and yet be a numskull so long as he is "absolutely honest and fair." That this was unintentional is shown by his serious statement: "It is not necessary that the purchasing agent should have a knowledge of the practical application of the material which he buys," and the sentence which follows it is a sad commentary on the state of the art if true. Stated bluntly, the purchasing agent's duties as described by Mr. Pearce consist in unerringly detecting the lowest of several figures when he sees them, and being quick about it; qualifications which should be found in any bright office boy who expected to hold his job.

This prevalent idea is the outgrowth of the period so well described in the opening chapter of Mr. Pearce's book when purchasing agents "were little more than clerks under the direction of the general managers, and simply placed the orders as directed by the heads of the departments."

It is true that an attempt is made to tone down the disparaging estimate by the introduction of such well-worn phrases as "keen, wide-awake business man," etc. But how a man can be keen, and wide-awake, and a good business man, and at the same time be entirely ignorant of the goods he is dealing in is not made clear. One might as well say that a keen, wide-awake superintendent need not know a train order from a way bill. Such a man reminds me of a salesman who once tried to induce me to buy the air brake hose he was selling by enlarging upon its superior qualities, and illustrating his point by describing at some length a break-in-two of a fast express train which was equipped with his air hose, and was running at a speed of 60 miles an hour. The instant the train parted the air brakes were applied with such terrific force that it came to a standstill within 200 yards, and he called upon me to marvel at the enormous pressure which his hose had successfully withstood in producing such unheard of results! I did marvel, but it was at the manager of the sales department who was cruel enough to send such a representative into a cold and heartless world. Probably his conception of a purchasing agent was akin to Mr. Pearce's.

I once knew a purchasing officer of a large railway who was a most conscientious, industrious and honest man and really a fine character, but he was literally ignorant of the difference between a box car and a stock car; and he did not know a piece of beveled house siding from a wooden bridge stringer, when he saw it. He was not a success in the vocation which had been thrust upon him, but he fitted Mr. Pearce's description to a nicety.

The idea that the purchasing agent is "fully protected by the specifications, tests and store inspection" cannot always be depended upon to work out in practice. Some railways have no laboratories and no testing department. There are no laboratory tests that exactly simulate service conditions, and the performance of different materials in service sometimes varies considerably from what the engineer of tests is led to expect. Besides this it must be remembered that any specifications necessarily describe the poorest material that will be accepted—never the best—and that occasionally the manufacturers discover methods of beating the specifications.

A purchasing agent who invariably paid the lowest obtainable price for material of a quality that just barely met the requirements of a specification, when by paying 10 per cent. more he could secure material that would give double the service, would be an expensive attachment to any railway, no matter how honest he was; but unless he knows exactly what he is doing he cannot afford to do otherwise. In other words, he cannot act intelligently even with such assistance as he may get from other departments, because he does not know enough about the material to apply the information he gets to any good purpose.

Real purchasing agents are not born, neither do they just grow. They are trained men, and their proper training is long and arduous. About the time when they should become most valuable they are usually, if successful, removed to some other sphere of activity and their greatest value is lost. If unsuccessful they are usually allowed to remain where they are to the detriment of the service and of themselves in the long run.

The time of a really efficient purchasing agent can most profitably be divided into about four equal parts. Two of these parts may be spent in his office, one on the road and at the shops, studying the practical results obtained from the materials he has bought, and one in the mills and at the factories, learning how the material which he is going to buy is produced.

The unfortunate thing about the matter is that there is no method of determining with exactness how much a purchasing agent who thoroughly understands his business saves for the company he serves. It can by no means be expressed by the prices he pays for what he buys. When you find a road on which the maintenance costs are uniformly low year after year, the superintendent of motive power and the engineer of maintenance of way earn well deserved reputations, but looking behind them you will probably discover a purchasing agent who knows all about "the practical application of the material which he buys," and, further still, knows a good deal about the processes by which it is produced. It is safe to say that a fairly large percentage of the final results reached by the men who use the material is due to the *purchasing agent who knows.*

GEO. G. YEOMANS,
Assistant to the President, Wabash Railroad.

INVENTORY OF LABOR.

WINNIPEG, Man., May 30, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I have read in your issue of May 26 a letter from Mr. Fritch on an Inventory of Labor. It gives an interesting description of a situation which does not exist, and as a remedy to the imaginary situation, makes a suggestion which only the great reputation of the oringinator will rescue from general ridicule. I am forced to the conclusion that his abilities have heretofore been exercised exclusively in outside engineering work, and that he has no close acquaintance with actual operating conditions.

There is no warrant for the statement that the cost of labor is not carefully weighed and compared, and the amount of help employed, adjusted to the volume of traffic. The first duty of a general manager is to see that, subject to the consideration of safety, the expenses are cut to fit the earnings. The shadow of this burden pursues his daylight hours and often stalks with him through the misty corridors of night.

On this railway, the superintendent makes up on the first of each month, an estimate of the month's payrolls for the upkeep and operation of his district, under the various headings and sub-headings. A copy of this estimate goes to the general superintendent and a copy to the general manager. If the latter is in touch with the traffic being handled, he can judge at once to what extent the estimates correspond and if any curtailments are

necessary he can order it made in anticipation. Each superintendent has an accounting office, which furnishes him, not only with the general results of operations on the district, but also detailed figures in connection with any piece of work in which he is specially interested. The general statistical office gives him the tonnage and expenditure figures, so arranged and analyzed that he can view his operations from many different standpoints and compare them with the performance on other districts. The same figures enable the general manager to arrive at the relative efficiency of different officers and to arrest any tendency towards stagnation, which may manifest itself on a particular district. The same system, modified to suit local conditions, is in existence, I am told, on almost every other American railway. If the results after all are not satisfactory, which I deny, it must be because we do not grow the right kind of general managers, or because their powers are restricted, or their usefulness impaired by outside interference.

The suggestion of your correspondent is that the situation, as he describes it, be saved by the creation of another department. In congress, or parliament, when the politicians are up against making a decision which is bound to meet with disapprobation from one quarter or another, they sidestep by appointing a commission of investigation. In the same way many railway officers when confronted with a problem which requires energy and patience for its solution, try to cut the knot by creating a department. We already have too many departments. Some created to assist and facilitate, only impede; others formed to counsel, only criticize and snarl. On some railways the only time they work in unison is when they desire to stifle the energies of some man of action who trys to get things done.

It is about time we decided to leave to Brandeis and that ilk these jeremiads over the sins of railway managers. The charge that inefficiency and waste are tolerated generally is a slander. The men who guide our operations are loyal to their elementary duties, which are to transport in safety and comfort their passengers, to handle with efficiency their freight tonnage, and to be at all times faithful stewards for the owners of the property.

GEORGE BURY,
General Manager, Western Lines, Canadian Pacific.

THE COST OF RAIL AND WATER TRANSPORTATION.

Richmond, Indiana, June 20, 1911.

To the Editor of the Railway Age Gazette:

In your issue of June 2 there appeared a communication from H. G. Moulton, of the University of Chicago, on the "Cost of Rail and Water Transportation." In this he states that there has been a dearth of real argument in support of the contention that water transportation is incomparably cheaper than that by rail, and that conclusions, which seem likely to be of determining force in shaping our future transportation policy, have been deduced from mere assumptions of the inherent cheapness of water transportation, supported by comparisons drawn from dissimilar conditions. Since the particular argument which he chooses for attack is one for which I am responsible, I beg the favor of sufficient space to point out a number of radical errors in Mr. Moulton's premises which destroy the correctness of his conclusions.

Professor Moulton quotes the figures showing that a dollar will carry a ton of freight 127 miles by rail, 333 miles on the present Erie canal, 1,250 miles on the Great Lakes, and nearly 2,000 miles on the Erie barge canal now under construction. He declares that the comparison on which these figures are based is misleading in that the average rate for railways is made up from rates both on high class, expensive freight and bulky commodities traveling at low rates, tonnage hauled both on easy grades and heavy grades, hauled short distances and long distances, and handled in both expensive and inexpensive terminals. He says: "The waterways carry practically only low grade freight, which must travel at low rates if it travel at all. These rates are, however, compared not with the railway rates on similar freight but with the so-called average rate on all freight of whatever kind. It is from such a comparison that the conclusion has been reached that transportation by water is cheaper than by rail. A comparison of water rates with those charged by the railways on bulky traffic would not reveal a similar disparity."

Broad generalizations are of use in developing underlying principles, but it often happens that such generalizations are not accurate when applied to particular cases. I am not prepared to admit, however, that such is the fact in the matter under consideration. The lowest railway rate on any commodity handled in bulk which has come to my attention is a rate of 2.1 mills per ton mile, made by the Chesapeake & Ohio on coal for export. Coal is handled on the Great Lakes in large bulk, more than 13,500,000 tons having passed through the Soo Canal in 1910. The rate from Buffalo to Duluth was .3 of one mill per ton mile—just one-seventh of the export rate by rail.

One of the greatest volumes of traffic of identical nature hauled partly by rail, and partly by water, consists of the shipment of iron ore from the head of Lake Superior to Lake Erie ports, and thence by rail to the Pittsburgh district, and the return movement of coal by rail from the Pittsburgh district to Lake Erie ports, and thence by water to the head of Lake Superior. These two commodities furnished more than 55,000,000 out of the 62,363,218 tons of freight passing through the Soo Canal in 1910. The average rate for the railway portion of the total haul was between 6 and 7 mills per ton mile, while the average rate on the water portion of the haul was between .6 and .7 of a mill per ton mile—or only one-tenth the rail rate. We thus find that when the comparison is confined strictly to low grade traffic handled in bulk and moving over long distances, the relative rates are not essentially different from those to which objection has been made.

Mr. Moulton is mistaken in the belief that only low grade materials are handled on the Great Lakes, although of course the great bulk of traffic is of that class. The reports of the United States Engineers classify the traffic through the Soo Canal under seventeen different headings, the commodities included in which vary in value from $2.75 to $222.34 per ton. The estimated value of the total freight passing the Soo Canal in 1910 was $654,000,000, and $416,000,000 out of this total was made up of general merchandise, manufactures and commodities, the value of which was in excess of $40 per ton.

Mr. Moulton insists, however, that a comparison of rates on the Great Lakes with those on railways is unfair, because "the Great Lakes constitute a highway ready made by nature," hence, "the rates charged there need be merely sufficient to yield a reasonable profit on the investment in the ships, in addition to meeting the expenses of operation. Naturally, the rates under such conditions would be much lower than if they had also to earn a profit on a tremendous investment in the highway itself." A study of the reports of the chief of engineers, the dominion department of public works, the lighthouse boards of both countries and the hydrographic office, shows that there has been expended in the deepening of connecting channels, the improvement of harbors, the construction and maintenance of lighthouses, buoys and other aids to navigation, and in surveys and publication of charts something like $130,000,000. Unquestionably, a large portion of the lakes have water deep enough for any vessel which ever has been built, or which probably ever will be built, but I am not able to see that a highway which has required the expenditure of $130,000,000 (and other large expenditures authorized and under way) is any more entitled to be called a "highway ready made by nature" than a railway on which a similar sum had been expended.

Mr. Moulton further states that conclusions drawn from comparisons of the cost of water and rail transportation are worthless unless the same elements are included under "cost" in each case, and points out that railway rates are made not only

to provide for the cost of maintenance and operation, but to provide for a profit upon the capital invested in construction and equipment, while in the case of the enlarged Erie canal the cost of construction, maintenance, and operation is borne by the state. "Any one who desires," he says, "can build a boat and engage in the carrying trade free of charge on the state's highway. If he can earn in addition to the operating expenses a reasonable profit on the cost of a small boat or barge he is satisfied. . . . Consequently, in comparing the relative cost of two rival modes of transit, to omit the enormous construction and maintenance expenditures in the one case, and to include them in the other, is to totally invalidate the conclusions drawn." There is more in this point than in the others which have been mentioned. In fact, there is a good deal more in it than Mr. Moulton has made manifest.

There is an old saying that what is sauce for the goose ought to be sauce for the gander. If interest on the amount invested by the people in the construction of canals or the improvement of our natural waterways ought to be included in the computation of the total cost of transportation thereon, why should not interest on the amounts given by the people for the construction of railways be included in the total cost of transportation by rail? Enormous quantities of lands were granted to aid the construction of railways in the United States. The total area of the lands so granted by the national and state governments is equal to that of the thirteen original states and greater than the combined area of France, Great Britain and Belgium. Other areas vast in the aggregate, were granted by counties, townships, cities and individuals. The customary arrangement in the Northwest was for the railway to demand of the owner of a town site free right-of-way and station grounds and a deed to each alternate lot. Enormous amounts of financial aid were given by national and state governments, cities, towns and vilages, counties, townships and individuals. The net amount donated by the state of Missouri and towns and cities in the same state was $34,000,000. The six cities of Wheeling, St. Louis, New Orleans, Pittsburgh, Baltimore and Philadelphia had in 1853 a railway debt of $26,584,000. The census of 1870 showed that there were still outstanding $185,000,000 of county bonds issued in aid of railways. One stretch of road in Wisconsin, one hundred miles long, received gifts of an average of $11,000 per mile in farmers' notes secured by mortgages.

One other point must be mentioned. The value of the grounds occupied by railway terminals is enormous. In some cases it is said that the value of the terminals is equal to the value of all the rest of the road. Recent purchases of ground for enlarging terminal facilities have necessarily commanded high prices, but much of the terminal properties were bought many years ago for low prices, and large quantities of such grounds were donated outright. And all such grounds, whether acquired by gift or purchase in former days, have increased tremendously in value, and a large part of this great increase in value has come, not by reason of what the railways have done, but by what the people have done. The value could not have been what it is except for the railways, of course, but when we remember that there were mighty empires, populous cities and a thriving commerce thousands of years before the railway was ever heard of, we are justified in concluding that the fundamental reason for this increase in value is the work of the people. People can build a city without railways, but railways cannot build a city without people. Unfortunately no complete compilation and tabulation of the amount and value of all the gifts made to aid in the construction of railways in this country has ever been made. Possibly the time is past when a complete compilation could be made, and it is certain that there can be no accurate calculation of the share which the people have had in increasing the value of terminals and other property of the railways, including the franchises. If, therefore, all conclusions are worthless when we make a comparison of the costs of transportation unless we include all the elements which have contributed to that cost, such comparisons must henceforth be entirely avoided, because it is utterly impossible to get at the "total cost" of railway transportation.

Mr. Moulton calls attention to the fact that the people of New York state have voted an appropriation of $101,000,000 for the work on the new Erie canal, and says: "This is an expenditure of approximately $300,000 per mile for the mere improvement of a waterway upon which many millions of dollars have already been expended." My understanding is that over much the larger portion of the route between Lake Erie and the Hudson river the barge canal has been located elsewhere than along the line of the original Erie canal. And I find from the reports of the state engineer and surveyor of New York that up to the end of 1882, when the tolls on the Erie canal were abolished, the revenues derived therefrom had paid back to the state the entire cost of construction, enlargement, maintenance, operation, superintendence, and collection of tolls, and a net profit of $42,599,717.25. That would seem to me to be a fairly profitable investment, even if there had been no collateral benefits in the way of a reduction of freight rates on competing railway lines and the up-building of cities at its terminals and along its line.

How great has been its influence on competitive freight rates is indicated by the fact that on at least one occasion on the day the Erie canal froze up the rail rate on grain from Buffalo to New York was increased from 3½ cents to 7½ cents a bushel. Philadelphia was originally the larger city, but within ten years after the completion of the Erie canal, New York took the leading place in population, wealth, commerce and manufactures, and has held it ever since. The people of New York were wise, in my judgment, in voting $101,000,000 to construct a new and much larger canal than the old Erie. I may add that, in my judgment, they would have been very much wiser if they had voted a sufficient sum to build a very much larger canal than the one now under construction.

Mr. Moulton says further: "Transportation must be paid for by someone. If the state builds and keeps in repair a transportation system, donating its use to the public, the cost of construction and maintenance is paid for by the inhabitants of the state in the form of taxes. The remaining cost—of equipment and operation, plus a reasonable profit on this investment—is paid by the shippers of traffic to the carriers thereof. On the other hand, if the means of transportation are privately constructed, the entire cost is paid by the shippers who make use of the transportation agencies." With the first part of this statement I agree, although I must add that Mr. Moulton seems to have overlooked the returns in the way of development which accrue to the state through the economic effect of waterways. Several nations of Europe which have had an experience in the matter of covering forty years or more, are continually putting more and more money into the improvement of waterways and turning them over to the free use of the public, in competition with state-owned and state-operated railways, which constitute the principal source of national revenues. But with the latter part of the statement above quoted I must emphatically disagree. The cost of transportation is not paid by the shippers who make use of the transportation agencies. It is only advanced by them. All transportation charges are ultimately paid by the people who consume the commodities transported. Any shipper who failed to take the cost of transportation into account in fixing the price of his goods would very soon go out of business.

Again he says: "There are waterway schemes before this country involving an initial expenditure of approximately $2,500,000,000. This vast sum, together with the interest which would accrue from a long period of bonded indebtedness, would constitute an enormous taxation burden for the country to bear." I should be gad to receive information as to the location and character of the projects to cost such an enormous sum, and to understand in what way they are before the country. On Feb-

ruary 11, 1910, Chairman Alexander, of the Committee on Rivers and Harbors, stated on the floor of the house that the completion of all projects then under improvement would cost $252,017,400. This sum includes all harbors, rivers and canals upon which any work had been done—that in addition there were projects which had been favorably reported upon by the engineers, but not yet adopted, which up to February 7 amounted to $87,548,600, or a total of $339,566,000.

The two largest projects which have been advocated in recent years are the Lakes-to-the-Gulf waterway and the proposed inland waterway along the Atlantic and Gulf coasts. The army engineers estimated the total cost of a 14 ft. waterway from the Great Lakes to the gulf of Mexico at $158,697,462. But this plan was reported upon adversely by the engineers, and appropriations are not made except upon a favorable report. The reports of the surveys on the Atlantic inland waterway have not yet been made, but as that project consists essentially of a number of comparatively short canals connecting bodies of water naturally navigable, even if the plan in its entirety is recommended by the engineers and adopted by Congress, the cost per mile will be very small as compared to the Erie canal. I am at a loss, therefore, to imagine where and what the projects are to which Professor Moulton refers. Even if there be projects calling for the expenditure indicated, we must consider not only the cost of the improvements, but their benefit, before we can judge whether or not the expenditure will be wise. James J. Hill says that the railways of the United States ought to spend more than twice as much as that in order to put themselves in a position to promptly and efficiently handle the enormous amount of business which the country has already shown it is capable of producing.

Mr. Moulton asks why such men as Daniel Drew, Commodore Vanderbilt and James J. Hill forsook the waterway business, in which they had been engaged, for the railways. Judging by what followed the transfer of their operations from waterways to railways my judgment is that one reason, if not the principal one, was the fact that all the natural waterways classed as navigable, which could of course be improved for a vastly less cost than artificial waterways could be constructed, are under the exclusive control and jurisdiction of the United States government, and so afford no opportunities for the piling up of colossal fortunes through the issuance of bonds to twice the cost of construction and the further issuance of stock in an amount equal to if not greater than the bonds, with construction companies, holding companies and town site speculations on the side.

Professor Moulton says: "Obviously the transportation system which can serve the country efficiently at the least cost is the system which should be established. . . . If a deep waterway from the Great Lakes to the Atlantic ocean or to the gulf of Mexico would drive competing railways from the field, why have not our great business men seized the golden opportunity?" I do not know anybody outside of a lunatic asylum who wants to drive the competing railways from the field. The transportation system which can serve the country most efficiently and at the least cost will be made up of three things: highways, railways and waterways, each co-operating with the other for the service of the public. Mr. Hill did go out of the waterways business and into the railway business many years ago, but he has learned something in the course of his years of experience. Standing before a great convention of the National Rivers and Harbors Congress in Washington, D. C., on the afternoon of December 5, 1907, Mr. Hill delivered a most striking address, in the course of which he said:

"Existing conditions in the transportation business of the country compel attention to its waterways and the assistance they may render. . . . We must prepare to utilize the waterway as a common carrier. . . . The railways are now unequal to the demands upon them. Farmer and merchant and manufacturer are feeling loss from uncertainty and delay in their shipments. Unless commerce can have an adequate channel it must decline. . . . All the terminals are congested. There is no longer certainty of delivery on any large shipment. . . . In seeking ampler ways for traffic, the country turns to its waterways for relief. These are about to emerge into an era of restored usefulness and influence in the development of our resources. The age of pioneering relied upon them alone. The age of settlement sought speedier and more universal means of communication. The age of maturity must press all the available agencies of transportation into service. The enthusiasm that built the Erie Canal must be aroused in this generation for a systematic and scientific improvement of all our waterways."

There has been expended in this country an enormous amount in the construction of streets and roads. This expense and the further expense of interest on the cost and of maintenance is paid by the people—paid for by taxes and not by tolls. I do not think anyone could get a respectful hearing today who would advocate the turning over of the streets and roads of the country to private companies. It is recognized that there are benefits derived from this expenditure which make it both necessary and wise. The same thing is true of the expenditure on waterways. The people of the United States have given outright to the railways property and franchises worth probably two and one-half billions of dollars. Streets and roads have cost at least that much, probably more. Even if they should spend that amount on waterways, who shall deny them the right to do so? And the experience of other nations shows that such an expenditure would certainly be one of the wisest and the most profitable investments that the people of the United States could possibly make.

S. A. THOMPSON,
Field Secretary, National Rivers & Harbors Congress.

THE MADEIRA-MAMORE RAILWAY.

BY P. H. ASHMEAD.*

The Madeira-Mamoré Railway, now being built in the interior of Brazil, is the outgrowth of many years of exploration, surveys and disastrous attempts at construction. As early as 1846 Col. José Augustin Palacios of Bolivia had mapped parts of the rivers, and Lieutenant Lardner Gibbon, U. S. N., described this territory in an official document published by direction of our Congress in 1854. Since that time several expeditions have penetrated this territory and numerous reports and books have been written on it, including exhaustive descriptions of the country by the German engineer, Franz Keller, and by Neville B. Craig, a member of the Collins expedition of 1877-79.

In 1868 Col. George Church secured a concession from Bolivia to organize the National Bolivian Navigation Company, with the view of canalizing the river around the falls. In 1869 he again went to Bolivia and secured a modification in the concession authorizing the construction of a railway, if it were more feasible, and also the right to make a loan, the principal and interest of which were to be guaranteed by the Republic of Bolivia. From the Bolivian capital he went to Rio de Janeiro in 1870, and the Empire of Brazil granted to him personally a concession for the enterprise to be called the Madeira & Mamoré Railway. After many difficulties Col. Church made a contract in 1876 with the American contractors, P. T. Collins, Philadelphia, Pa., a firm that had successfully built many miles of railway in the United States, but none in the tropics; in fact neither of the partners had ever been in the tropics. They worked under distressing conditions, having practically no money, little food and few medicines, until 1879 when Col. Church went to Rio and had the Brazilian concession cancelled.

Brazil will owe the actual accomplishment of the construction of this railway to Percival Farquhar, another American whose interests had been largely in railways in southern Brazil, in various port improvements and in electric railways and power plants in the republic. The present company was organized under the laws of Maine, and May & Jekyll, American contractors, who had been for a number of years in Central America and in

*Consulting Engineer, New York. Mr. Ashmead was chief engineer of the Madeira-Mamoré Railway from 1908 until he was sent out with the beri-beri in 1910.

Cuba were engaged on a percentage basis, the railway company being represented on the work by a chief engineer and an accountant to direct the engineering work and audit the accounts and expenditures in Brazil.

The rivers Mamoré and Guaporé are integral parts of the Madeira. Cartographers, however, designate as the Madeira only that part from the mouth of the river Beni, at Villa Bella in Bolivia, to the mouth of the Madeira at its confluence with the Amazon near the village of Itacoatiara about 100 miles east of the Brazilian city of Manáos. Keller estimated the maximum discharge of this stream below the falls to be approximately 1,400,000 cu. ft. per second. Apart from close to the river banks very little is known of the great Amazonian area comprised in the states of Amazonas and Matto Grosso, and the information that has been published regarding it is limited to the notes of travelers along the rivers, whose explorations ashore have covered but narrow zones parallel to the rivers. The dense forests, in which the trees average considerably over 80 ft. in height,

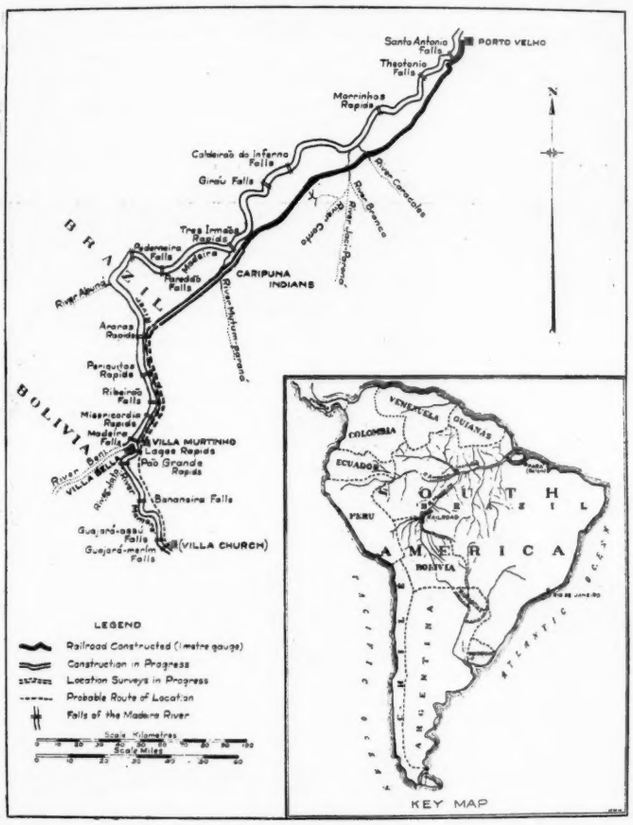

Fig. 1—Madeira-Mamore Railway.

with individual trees upwards of 125 ft., together with a dense jungle of undergrowth, are supposed to extend for 40 leagues south and east of the Madeira and Mamoré rivers, and approximately to parallel them.

From the time the white man entered South America until the present, the route by water, with portages around the falls, has been the only one traveled from that section of eastern Bolivia and western Brazil to the sea. Passengers are carried up and down the river in the cargo boats called "bateloes," of from two to 10 tons capacity. From Riberalta, on the river Beni, to Santo Antonio, on the Madeira, somewhat over 320 miles by the water route, the journey under favorable conditions occupies from 10 to 12 days going down, and from 30 to 40 days going up. Lieut. Gibbons required 12 days to descend from Guajaramerim to Santo Antonio, which he says "is considered by Brazilian navigators fast traveling."

The cargo boats usually have a hood of thatch, made from the palms of the forest, which is placed at the stern as a shelter from the rays of the sun and from rains. They are manned by from 12 to 16 paddlers with a pilot, the Bolivian semi-civilized Indians making the best crews. Sufficient food must be carried for the whole journey, because practically nothing other than a few articles of canned food at two of the falls can be procured until Villa Bella is reached. The whole journey is annoying, uncomfortable and tiresome. One must sit in a cramped position under the cover of the hood, or if outside, on top of the variously

Fig. 2—Engineers' Camp.

shaped parcels of miscellaneous cargo. By day a small fly, locally called a "pium," attacks in swarms all exposed parts of the anatomy, and the bites itch for days afterward. By night mosquitoes attack, and there are other annoying insects, among which are huge beetles with jaws like calipers, which are attracted by the lights and fires when camp is made for the night.

At each of the falls cargo must be unloaded and carried around on the shoulders of the crew, the boat beached and

Fig. 3—Steam Shovel at Work.

transported, sometimes on rough rollers hewn in the forest, sometimes by dragging it by main force over the smooth round stones. At Theotonio falls, the greatest of all, one of the largest rubber exporting firms of Bolivia has built a little narrow gage railway over which boats are transported on trucks, those of the firm gratis, while others pay a tariff of 5 milreis, or about $1.50 per boat for the few hundred feet haul.

It has been said that the Madeira-Mamoré will occupy a posi-

tion in this immensely rich section of the world comparable to that of the neck of an hour-glass, and over it must pass the huge traffic that will develop a few years after its completion. It will doubtless be the main stem of hundreds of miles of railway that must be built to develop the section. The country through which the railway will pass lies a few degrees south of the equator. Observations by the engineers of the present expedition locate Porto Velho in latitude 8 deg., 45 min., 25 sec.

Fig. 4—Method of Building Bank Across Swamp.

south, and longitude 64 deg., 21 min., 54 sec. west. To reach it by the regular lines of steamers it is necessary to touch at Pará, some 90 miles from the ocean, having a population of perhaps 180,000, and at Manáos, with a population of about 60,000, and nearly 1,000 miles from the sea, on the Rio Negro. Both of these cities are attractive in appearance on first view, but unfortunately yellow fever is nearly always existent in them. In southern Brazil, the government has exterminated this type of fever. Rio de Janeiro and Santos are now free from it, but in the north little has been done toward its eradication. The feeling among the citizens in the north with regard to this type of fever seems to be that as it only attacks the foreigners, of whom there are comparatively few, and who are in the country for but a short time, and mainly to make money, that it should not be incumbent upon the authorities to spend the money received from taxation for the eradication of the fever and to protect the foreigner, when the Brazilians themselves are apparently immune. When Porto Velho is reached, it is most difficult, from the appearance of the region, to comprehend the reason for the high percentage of sickness there and along the line of the railway. Away from the immediate vicinity of the river mosquitoes are not as annoying, nor apparently so plentiful as in many parts of the United States, and it is now universially acknowledged that malaria is transmitted solely by the mosquito.

Fig. 5—Track Supported on Brush Foundation.

The temperature along the line during about ten months of the year ranges from 72 deg. to 93 deg., seldom, however, exceeding 88 deg. The maximum occurs between 2 and 3 p. m. From the latter part of June, until August, the range is perhaps 5 or 6 deg. lower during the day, and has reached 59 deg. some nights. Along parts of the cleared right of way, in the larger camp clearings and in Porto Velho, a good breeze generally stirs until 11 o'clock in the morning, while from that time until the middle of the afternoon it is hot, sometimes stifling. In the cleared sections the country looks attractive, and yet there is continually enough sickness to require a large hospital of some 12 or 14 buildings, five or six wards, of which each is some 40 by 200 ft. Including those on the line, are some 14 to 16 physicians, 8 to 10 trained nurses, and perhaps 10 to 20 native helpers or Jamaican negroes. During two years' experience in the country, and from information covering nearly two more years' work of the present expedition, the writer knows of but three employees who escaped some form of illness.

The annual rainfall approximates 100 in., and the most severe

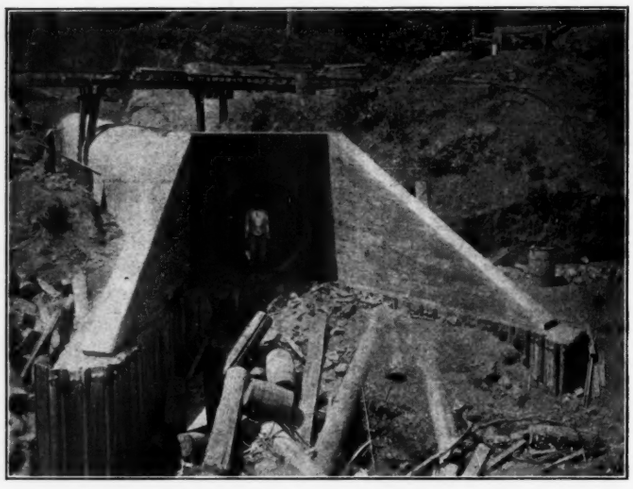

Fig. 6—Circular Concrete Culvert.

illness occurs during the dry period of a part of June, in July and August, and a part of September. The actual percentage of sickness from each disease of record has not yet been computed, but doubtless malaria is responsible for 80 or 90 per cent. of the whole. A number of cases of yellow fever have developed among the laborers while on the river en route to the works. Such cases are quarantined on an island in the river near Santo Antonio, and of those that have been so confined, infection has generally been traced to Pará and Manáos. Other diseases that cause trouble are hookworm, blackwater fever, dysentery and beri-beri, while there have been a few cases of typhoid. Of beri-beri, that peculiar disease of the Orient and parts of the tropics, little is actually known of the cause. The army surgeons in the Philippines, and the Japanese surgeons claim it is caused by eating hulled rice, but in Brazil rice is a rare article of diet, and yet there are hundreds of cases. Departure from the environment in which it was contracted has seemed on this particular work to be the only real cure.

In the region of the railway on the Brazilian side of the rivers, there were probably not more than 500 inhabitants, other than the autochthons, before this construction began. From Santo Antonio down the Madeira to its confluence with the Amazon, there are but three settlements that may be properly called towns;

Borba, Manicoré and Humaythá, the last named the largest, with perhaps 500 people. It is probable that from Santo Antonio to the mouth of the river, about 700 miles, there are not more than 2,500 people inclusive of those in the towns mentioned. In these villages are the churches, the lower officers of the state and a few small shops.

The Brazilian in this section is not fond of work. Along the river the men are seen in boats spearing fish or shooting turtles, or they may be swinging in their hammocks in the shade of the trees, while the women seem to be always preparing something to eat. In general they all live a happy-go-lucky life, with no cares and little food other than that readily obtained from the

Fig. 7—Spanish Sub-contractor at Work.

river, their mandioca patches and the fruit trees. Upwards of 50 per cent. of the labor employed on the railway has been Brazilian, and it is quite inefficient. The head surgeon on the staff has been quoted as stating in a report that a great number of the deaths on the works occur from chronic diseases of the liver, and nephritis, which result fatally only after many months or years of insufficient food, intestinal parasites and malaria.

The Collins expedition in 1877-79 had located a line somewhat over 60 miles long between Santo Antonio and Caldeirão do Inferno (boiler of Hell). Their records were not available when the present expedition began its surveys. The Brazilian government informed us that although Dr. Pinkhas of the 1885

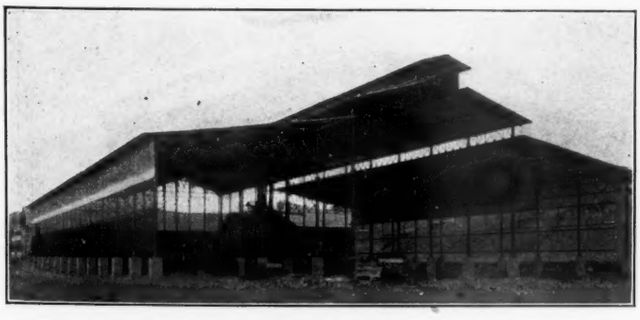

Fig. 8—Car Shops at Porto Velho, Under Construction.

Brazilian commission had brought much of the Collins data to the capitol, it had been destroyed by rats and insects while in storage just after the Republic succeeded the Empire. Unfinished cuts and embankments made by the Collins firm extended some seven miles south of Santo Antonio, covered by woods as thick as the virgin forest on each side of the old roadbed. From Mr. Craig's book descriptive of the Collins expedition, a small lithographic map was secured, showing the line they had surveyed, which had been approved and adopted by the Morsing-Pinkhas commission in its report to the government, and which also indicated Dr. Pinkhas' suggested line beyond the terminus of the Collins survey toward Guajara-merim. On this small map, from the end of the location made at the time the writer

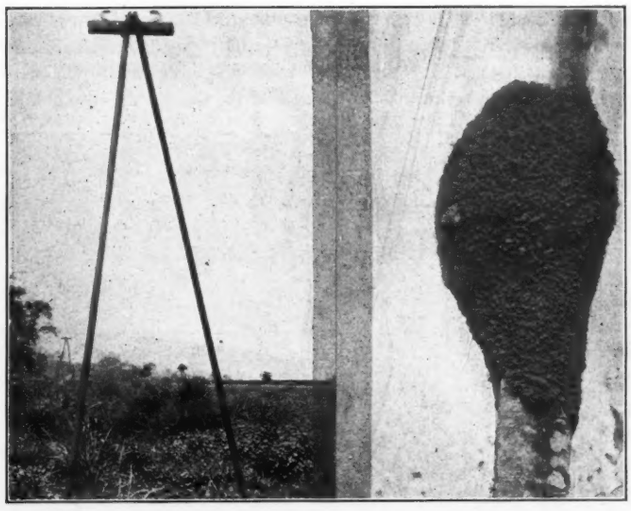

Fig. 9. *Fig.* 10.

Fig. 9 and 10—Telegraph Pole Made of Old Rails, Necessary to Withstand Attacks of "Cupim"—Nest of the "Cupim."

reached the work, a distance of 28 miles from Porto Velho—a tangent was laid following the general direction of the Collins survey to the river Jaciparaná—the magnetic course was scaled, and a preliminary party was instructed to run out that tangent, to make topography where a railway could be built near it, and to run spur lines and take topography from them if the tangent ran through country in which construction was not feasible. In

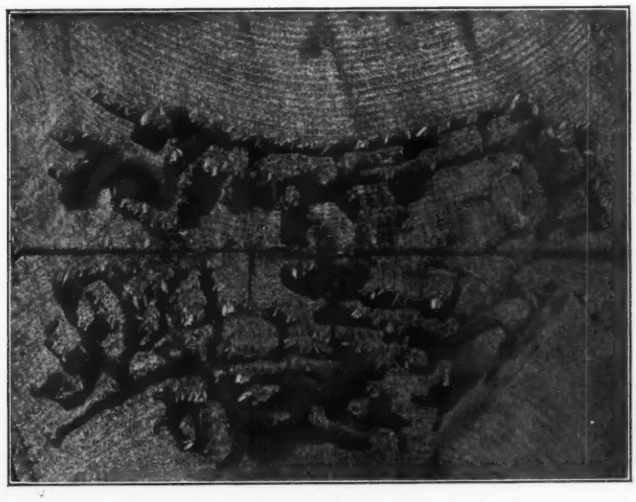

Fig. 11—Result of Action of "Cupim."

running the one tangent through, the objects were mainly to secure a direct line over which supplies might be sent to the engineers at the front and to have a base line from which to make the studies and secure the necessary topography in some rough country through which, from previous reports, we felt certain the railway would have to be constructed. This method proved to be entirely satisfactory in the virgin forest with undergrowth so dense that it was usually impossible to advance even a few feet without constant and laborious cutting with machetes and axes. During the rainy season the light was frequently so dim in the cleared lines, or "picketes," that instrument work could

be done only between nine in the morning and three in the afternoon.

Mainly because of sickness, engineering parties were each practically doubly equipped with men. There were two transitmen, from two to four topographers, two levelmen and from twenty to forty laborers, the majority of the latter, other than the cook, being Brazilians accustomed to the use of the machete. Delays were frequent, even with such large outfits, and at times only five or ten of the laborers were fit for field work, the others being confined to their hammocks with fever or with poisoned and swollen feet caused by contact with thorns on trees and

Fig. 12—Grading at Kilometer 80.

shrubs. Because of the various delays, the maps of the finally located line for the most difficult section, between Porto Velho and the Jaci-parana, somewhat over 55 miles, were presented to the government in April, 1909, nearly a year after it had been decided to follow the Collins line. Some months after that part of the line had been located, through the courtesy of J. C. Patterson, who had been a member of the Collins engineering staff, we received a profile, and the alinement notes of their first 20 miles of line. When platted to the scale of our maps and superimposed on them, it showed that we had practically followed their location, the main difference being that from a point some 12 miles from Porto Velho, we had run in a five mile tangent and cut through a small knoll, around which they had introduced a short curve. Other than by delays caused by the constant cutting of underbrush, sickness and frequent changes of personnel of the engineering staff and its laborers, the surveys were delayed during the rainy season by high water in the Madeira river and its affluents that the line crossed. During the dry season all of these affluents, except the Jaci- and Mutum-paranás, may be waded, or spanned with logs; but in the wet season it was necessary to pass out of the woods to the Madeira, and up it and its branches in canoes. The Brazilian laborers are decidedly averse to packing camp equipage and supplies on their backs, and when ordered to do so many of them quit work, consequently attempts to move camp by such means were in general abandoned—the time necessary to inform headquarters and have more laborers sent to the front to replace the disaffected men, being longer than that required to move the long way round by boats.

The terminal points originally decided upon by the government were to have been Santo Antonio—at the northern end of the series of falls—and Guajara-merim—the most southern of the falls, and just previous to the death of Colonel Church the ministry at Rio de Janeiro gave its consent to name the proposed town there Villa Church in his honor. At the present time there is no village of any sort at the place, and it is merely a name on the map designating the falls. It has been found advisable to have the northern terminus some seven kilometres down the Madeira, because of the restricted area available at Santo Antonio for yards and docks, and the site chosen is now called Porto Velho. From Santo Antonio to the river Mutum-paraná, the land along the Madeira river is rough. A line close to the river would incur a prohibitive cost on account of the small hills of granite divided by deep ravines.

The possibility and probability of annihilation by the Indians had restraned explorers and engineers of former expeditions from venturing great distances from the river's edge. From the beginning of the present work until its engineers reached the Mutum-paraná, they were continually on the "qui vive." There had been many reports of signs made of rudely-cut sticks placed in newly-cut trails, and signs made of feathers had been interpreted as warnings, but none of the parties was attacked. After passing kilometre 45 without attacks, it was decided to run the long tangent mentioned. The surveys of the present expedition have resulted in gaining a general knowledge of the topography of a district from five to seven miles wide parallel to the right bank of the Madeira river and it is known now that there exists a range of small hills between the river and the comparatively flat country back of it, the edge of the flat country being from two to five miles from the river. The line upon which the railway is built after climbing out of the main valley of the river some twelve miles south of Porto Velho, follows the divide between the area draining directly into the Madeira and that draining into its branches. the Jamary and Jaci-paraná, at an elevation of from 90 to 120 ft. above high water, descending again at the Jaci-paraná to an elevation some 36 ft. above the Madeira at Porto Velho. Near Porto Velho there are several cuts through a particularly hard granite, but on the summit, the cuts are in a more recent, softer granite, called "cascalho" in Portuguese, red in color, some of which rapidly disintegrates when exposed to the air, but other sorts harden. This latter constitutes an ideal material for ballast, packs well, forms no dust, and when formed into the roadbed sheds water quickly and perfectly. In some of the cuts this material has been worked readily with a steam shovel, while in others it has been necessary to use some powder.

The length of the main line was estimated by the government to be 340 kilometres, and with the additional 7 kilometres to

Fig. 13—Group of Caripuna Indians.

Porto Velho, this would be somewhat over 215 miles, but it is probable that including the detour made to reach the mouth of the Abuná river, the actual length of the main line will be shown by the surveys when completed, to be somewhat more than 225 miles. With the consent of the governments of Bolivia and Brazil, the company will also build a branch line from some point on the main line, not yet selected, to a point on the Beni river above Esperanza falls, some 25 miles in length, and may later continue this branch to the town of Riberalta, 30 or 40 miles further up the Beni. The road is of one metre gage. The contract provided for maximum grades of 2 per cent. and for

curves of not less than 160 metres radius (10 deg., 45 min. English), but as the Madeira-Mamorè Railway Company desired to avail itself of the right to lease and operate the road, the engineers were instructed not to exceed 1 per cent. grades, and no curves have been staked exceeding 9 deg. English.

It is now estimated that the cost to the Madeira-Mamoré Railway Company will be upwards of $20,000,000 to complete the main line of approximately 215 miles, and to this will be added the cost of a bridge over the Mamoré river into Bolivia, over

Fig. 14—Jaci-Parana Bridge; 271 ft. 9¾ in. Span.

half a mile long, together with the cost of proposed branch lines and extensions in the Republic of Bolivia, which at present are estimated to aggregate some 80 or 90 miles in length.

The difficulty in mapping the country sufficiently well to make a proper economic location in the dense forest may be appreciated when it is known that for each mile of located line, slightly more than five miles of spur and preliminary lines were run. In the estimate of the government, allowance was made for payment for but one mile of preliminary to each mile located, but when its fiscal engineer became cognizant of actual conditions, it was arranged and mutually agreed that payment should be made on the basis of three to one.

Of the equipment now on the works, the locomotives, flat and box cars, will become a part of the operating equipment. There are now in Brazil: 9 Baldwin Mogul locomotives, weight on drivers, 68,000 lbs.; 2 Baldwin Consolidation locomotives, weight on drivers, 92,000 lbs.; 200 flat cars, 20 tons capacity, 33 ft., 4¾ in. long; 36 box cars, 20 tons capacity, 33 ft., 4¾ in. long; 40 Rodger ballast cars, 33 ft., 4¾ in. long; 3 45-ton Bucyrus steam shovels, 1 35-ton Bucyrus steam shovel, 7 Marion ballast unloaders, 100 Decauville cars and 80 miles of light track; 1 25-ton Bay City locomotive crane, 1 7½-ton Bay City locomotive crane.

The Decauville dump cars and track are sent up the river in the large canoes, and after being unloaded at the most convenient point to the part of the line on which they are to be used, are transported on wagons to the line. Boilers for the drills, concrete mixers and pile drivers are transported to the line in the same way when they are needed ahead of track. Temporary trestles are built so as to push the track ahead, and permanent bridges and culverts are built later. The steam shovels can, of course, only be used as track advances, and the grades in some cuts have purposely been left high at times so as to get equipment through, after which the grades were lowered.

It is not anticipated that much passenger equipment will be required, but there are now in Porto Velho two combination first and second-class passenger coaches, each 43 ft. long. The rolling equipment of all the various railways in Brazil in which Mr. Farquhar is interested, which, with the lines now operated, being constructed or surveyed, total about 15,000 kilometres, will be standardized. The shops will be quite completely equipped. It is already possible to make all repairs now needed and

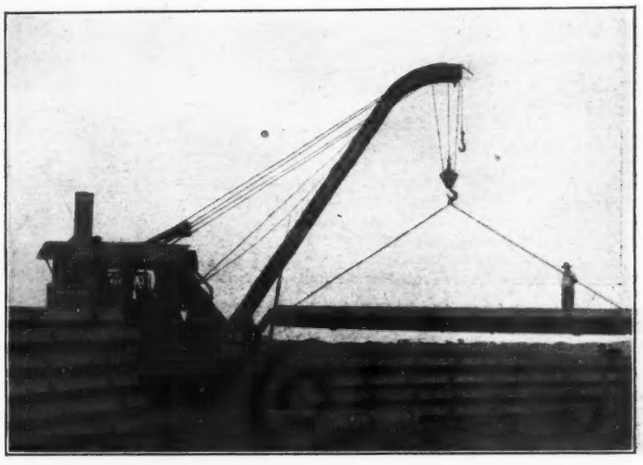

Fig. 16—25-ton Locomotive Crane in Porto Velho Yard.

eventually it will be possible to construct cars by importing only the wheels and some few parts. The complete equipment for the shops will be purchased in the United States.

Usually there are from 150 to 200 mules and 100 work oxen on the work, and the sub-contractors are furnished with animals to use in connection with the dump cars. Mules have been brought from Pará, 1,600 miles away, and from as far as Rio de Janeiro and Buenos Ayres, in steamers that required from 17 to 25 days to make the trip. The oxen have been purchased along the Amazon river, but as soon as the road reaches a convenient point, these animals can be secured from the large herds

Fig. 15—Porto Velho in December, 1910.

in Bolivia at perhaps one-third of the cost of the Amazon cattle.

In general, the ocean freight rates from New York and Europe to Manáos, are from thirty to forty shillings per ton, and until the railway company bought and operated its own marine equipment for use between Manáos and Porto Velho, the lines of river boats operating on the Amazon and Madeira rivers charged as high as $25 gold per ton for the 810-mile trip, and in some cases absolutely refused to transport certain parts of construction plant. The company was therefore obliged to buy its own river craft and now owns and operates for its exclusive use: One swift river steamer for passengers and freight, five powerful tug boats, four steam launches and 11 lighters of from 80 to 200 tons capacity, in addition to a number of the large canoes used

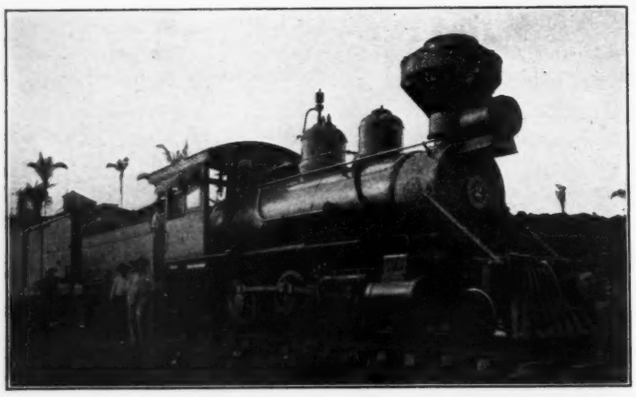

Fig. 17—Baldwin Mogul Locomotive.

in the river between the falls. Ocean steamers drawing 20 ft. can navigate to Porto Velho from early in January until late in May. In 1909, nine steamers reached Porto Velho from New York and ports of Europe, loaded with railway material. In 1910 fourteen steamers cleared from foreign ports for the place. The difference between high and low water at Porto Velho is approximately 46 ft., high water occurring about March 20 and low during the whole month of September.

The force employed on the work has come from many parts of the world. Probably 50 per cent. or more of the laborers have been Brazilians, but nearly all of the South and Central American countries have contributed, as have China, Persia and Turkey. Foremen, clerks and engineers have come mostly from the United States, but England and her colonies, France and Germany have also contributed to the staff. The most experienced and intelligent laborers are the Spaniards, the nucleus of which force came from Cuba, having been employed on railway work there by the same contractors. Other labor, common and skilled, has been recruited by agents of the contractors in Portugal, the West Indies and Germany, but the Spanish Gallegoes have been the bone and sinew, and many of them in gangs of from 3 to 10 men take sub-contracts and save much money.

The physical construction of the railway is not difficult. In the first fifty-five miles some heavy work was necessary, and the contractors divided their men and distributed their forces as well as they could, so that the completion of the larger cuts would not delay the track. Practically all of the work between Porto Velho and the river Jaci-paraná, except a few shovel cuts, was done with men, mules and the Decauville outfit. The Spanish "subs" would move from 3 to 7 cubic metres per day, while the Brazilians, working for wages, seldom moved 2 cubic metres per day. The most economical method for the construction of the road would doubtless have been by the use of light machine equipment, but for certain reasons this was not used, and when completed the road will have been mainly built by hand, notwithstanding the fact that the greatest difficulty encountered has been that of securing laborers, sufficient in number and efficient in action.

Construction may be said to have begun in April, 1908, and from that date until December of the same year, it has been estimated that from twelve to thirteen thousand individuals were sent to the works in order to secure an average monthly force of 1,100—staff and labor forces both included. During the year 1909 the average number per month rose to 2,300, during 1910 the number per month gradually increased, and early in 1911 the contractors reported that they had a total of 3,500 on the whole works. The boats and lighters of the company brought in hundreds of laborers each month, and the regular lines of river steamers carried their hundreds of laborers away from the work. For months at a time, the company sent in as many as 600 men per month, while the river steamers carried out slightly more, depleting the force constantly. It was a constant struggle to secure enough men to keep the track advancing, and there were seldom enough men to keep the work going ahead and the track up at the same time. During the period from June to September, the hospital records indicate a loss in efficiency of from 10 to 25 per cent. and during the rest of the year of from 5 to 10 per cent. from sickness.

Some of the unit costs of this work may be almost unbelievable to engineers and contractors without experience in tropical countries. The approximate costs of some items, for instance, are: Clearing, $225 per acre; earth excavation, $2.25 per cubic yard; rock excavation, $7.00 per cubic yard; concrete masonry, $61.00 per cubic yard; ties, $2.60 each; track laying, $8,400 per mile; telegraph and telephone, $600 per mile; timber, $310; piles, $3.60 per lineal foot. For the necessary buildings, the government contract provides payment to be made per square metre of superficial area. For the shops and warehouses that have been erected the cost to the railway company has been upward of $2.75 per square foot.

The charges for transportation by the barge canoes in the district of the falls has been: For freight of whatever class, down river, $1.52 per ton mile; up river, $2.22 per ton mile. For passengers, down river, $0.57 per mile; up river, $1.14 per mile. The government has already approved the bases of the tariffs that may be charged by the railway under twenty-five freight classifications, for which there are, however, but fifteen different

Fig. 18—Completed Track.

rates, a number of the classes having the same rate. For a long haul the rate per kilometer is from 60 to 70 per cent. of the short haul.

For the first few years of operation, rubber, food stuffs and cattle will doubtless constitute the bulk of the traffic, and for these the long haul rates are: Rubber, $0.80 per ton mile; food, $0.40 per ton mile; cattle, $0.90 per head per mile. For passengers the tariffs for the long haul are, for first class 70 per cent. and for second-class 80 per cent. of the short haul rates. The long haul rates are: First class, $0.14½ per mile; second class 0.10 per mile. The railway is required under its lease to transport free of charge, colonists and immigrants and their baggage, tools and farming implements—seeds and plants sent by the

Federal and State Governments—the mails, and employees of the government mail and telegraph departments. It is required to transport at 50 per cent. of tariff rates officers of the government and their baggage, and all supplies sent by the government to relieve drought, floods and other public calamities—at 30 per cent. of tariff rates—munitions of war, officers, soldiers and their baggage, at 15 per cent. of tariff rates—all other passengers and cargoes of the Federal Government not specified above, and materials destined for the construction of branch lines of the same railway.

All photographs for this article were taken by the official photographer for the railway, D. B. Merrill.

DEMURRAGE OFFICERS.

The twenty-second annual convention of the American Association of Demurrage Officers was held at the International Hotel, Niagara Falls, N. Y., June 22 and 23. John F. Roach, Manager of the Central Demurrage & Storage Bureau, St. Louis, Mo., and president of the association, presided.

The membership of the association was shown to have been reduced to twenty-nine, by the abandonment of eleven associations in New York, New Jersey, Maryland, Pennsylvania and Ohio; but the members have not lost heart, and Manager E. E. Mote, of San Francisco, announced that he had traveled across the continent to attend the meeting, by direction of his executive committee; thus to attest by his presence the desire of the Pacific Coast roads for the continuance of bureau supervision over demurrage rules. The Southern managers, pretty generally, reported the same sentiment prevailing among the railways in the South. But in the general discussion there were radical differences of opinion. The men from the West agree with the Southerners, but the Eastern men, evidently reflecting the views of their superior officers, were divided. East of Chicago a number of bureaus have been abandoned. As on many previous occasions, the idea was prominently brought out that the success of a bureau depends on the personality of its manager.

The principal business of the meeting grew out of the report of Captain Haskell, of Atlanta, who, as chairman of the committee on rules, recommended changes in the reconsignment rule; the rule governing cars containing freight in bond, or subject to the United States customs; the rule relating to the giving of notice of the arrival of freight; and the claim rule. Under the claim rule an extended discussion arose over the provisions for refund or cancellation of demurrage charges caused by weather interferences, or by the bunching of cars in transit, which are delivered to the consignee at destination in accumulated numbers. The conclusions of the association, with respect to the amendments and modifications of the rules, are to be laid before the American Railway Association.

I. R. Van Tuyle, Manager of the Western Demurrage Bureau, Omaha, Neb., was elected president for the ensuing year; E. E. Mote, manager of the Pacific Car Demurrage Bureau, San Francisco, was elected vice-president, and A. G. Thomason, Demurrage Commissioner, Boston, Mass., was re-elected secretary and treasurer. The selection of a time and place for the next meeting was deferred until later in the year, and is to be determined by ballot.

It was the consensus of opinion at this meeting that the Uniform Code of Demurrage Rules had, on the whole, worked very satisfactorily during the first year of its operation. The changes suggested are designed to make clearer the intent of the rules.

An interesting feature of the meeting was the reading of a paper which had been presented to the American Association of Local Freight Agents, at Kansas City, Mo., in which the local freight agents argued for the continuance of bureau supervision over demurrage rules. It was contended that a good demurrage bureau, under a capable manager, prevents most of the difficulties arising from demurrage rules, and provides conditions under which both the railways and the public have confidence in uniform treatment, applied impartially, on all roads.

LETTERS FROM AN OLD RAILWAY OFFICIAL TO HIS SON, A GENERAL MANAGER.*

VI.

PHOENIX, Arizona, May 13, 1911.

My Dear Boy: You ask me to give you my views on the handling and settling of freight claims.

I restrain my impatience and consequent desire to jump on you hard. Allow me, therefore, with expressions of distinguished consideration, to invite your esteemed attention to the fact that your valued request contains no mention of an intelligent desire for possible enlightenment on the most important feature of the problem, namely, the prevention of claims, the eradication of causes.

A railway is a complex proposition. Seldom can we discuss one of its problems independently. So ramified are its activities that the penumbra of one shadow coincide with the outline of the next. Studied from the broadest view of railway administration, freight claims are found too often doing duty as a shadow which hides the real substance, poor operation. It was formerly the almost universal practice on American railways for freight claims to be handled and settled by the freight traffic department. It was felt that the man who secured the business, who dealt with the shippers, was the man to placate the claiming public. No, this did not always lead to rebating. It placed before the man hungry for gross revenue a temptation which he often resisted. Since the passage of the Hepburn act and the consequent inspection of claim disbursements by the Interstate Commerce Commission, the general trend of railway practice has been to place the so-called freight claim department under the accounting department. Railways are waking up to the fact that the new order of things means more than an accounting proposition; that in government regulation and supervision the whole matter of railway administration is involved. What we technically term "operation" is the largest of the component elements of administration.

The tendency of overspecialization has been to leave to the accounting or the legal department the matter of relations with the various branches of government, both state and federal. Since a part can never equal the whole the results have been disappointing. Railways are learning by costly experience that traffic men and operating men must have an active part in these vital relations. Government in the long run reflects the spirit of its people. The American people as a nation are positive and constructive. The training of railway lawyers and railway accountants is often negative and resisting. The general counsel and the general auditor are inclined to tell us what we can not do. The traffic manager and the general manager, on the other hand, tell us what we can do. Out of it all should come a well balanced administrative machine. We need the whole machine, not a specialized part, the positive as well as the negative elements, when we move alongside the reciprocating engine of government.

Again, putting a man in the accounting department does not make him any more honest than the rest of us. There is more logic in taking freight claims away from the traffic department than there is in placing them under the accounting department. The traffic man, the accounting man, or the legal man can settle or refuse a claim. None of these can eradicate its cause. Only the operating man can do this. Many roads cling to the belief that their wonderful interior combustion and hot air harmony give the operating department sufficient information to serve the practical purpose. My observation has been that this information is not sufficiently fresh; that it trails along too far behind the actual transaction. Some roads, like the Southern and the 'Frisco, have organized special bureaus in the operating department to minimize the causes of freight claims and to follow up discrepancies while the case is fresh; in other words, to investi-

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gate before the claim is filed. Sometimes this duplicates the work of the freight claim office and sometimes it does not.

So bad have been freight loss and damage conditions on most American railways that almost any kind of attention has resulted in improvement. Nearly every road can cite figures in defense of its particular treatment of the situation. There are many good ways. In the absence of an absolute unit of comparison the best way must be largely a matter of opinion. To me the logical and practical principle has been discovered by two of the best managed railways in the country, the Chicago & North Western and the Chesapeake & Ohio. These roads, among others, place their freight claims under the operating department, thus reserving the hair of the dog for treatment of its bite. With such a system the general manager controls the disbursements to operating expenses for which he is responsible. Under other systems the general manager accepts charges which he does not directly control. Some roads have endeavored to correct this last defect by requiring claim vouchers to be signed by the general manager and the division superintendent. This beautiful example of circumlocution is expensive. There are only twenty-four hours in a day, and even claim papers can not be handled for nothing. Furthermore, the claimant himself refuses to see the beauty of delaying payment to carry out a theory. In some states he has secured legislation penalizing railways for delay in settling intrastate claims. Can you blame him? The claimant aforesaid may happen to be a country merchant waiting for the way freight to come in. It brings him six boxes of groceries. In his presence, and that of the agent, the way freight brakeman drops and spoils a box. On many roads, not only is the agent not allowed to pay for this spoiled box, but is expected to require the indignant consignee to pay the freight on all six boxes before removing the other five. The consignee is told to file a claim, which then makes its weary round through the circumlocution office where clerks are called investigators. Such companies say in effect to the agent: "Yes, you are a good fellow; you get us a lot of business; you handle thousands of dollars of our money; you represent us in many things; you must understand, however, that a freight claim is a specialty requiring expert advice; a bad precedent might involve us in the future; you know, too, we might be criticised as opening the way to grafting by some other agents if we let you pay out money without authority from the accounting department; yes, we like your work and expect to promote you in the sweet by-and-by," etc., *ad nauseam*. Fortunately, these narrow views are giving place to more enlightened practices. On several railways in Texas most station agents are authorized to settle instanter certain classes of palpably just claims up to $20 or $25.

Among the practical advantages of claim control by the operating department are quicker recognition of lax methods causing claims, better discipline and morals of train and station forces, prompter settlement, and greater attention to seal records. The Chesapeake & Ohio make surprise tests by breaking a seal and resealing the car with a different seal to see if the next man copies the last record, or actually takes his seal record from the car. This road also appeals to the human element. Claims settled are tentatively charged to the conductor or agent apparently at fault, and he is given an opportunity to explain. This is not real money, but a combination of Brown system, Christian Science coin, and 1907 clearing house certificates. The practical effect is very real, however. Each man learns to feel a responsibility which is reflected in a desire for a clean record. The general claim agent, who is under the general manager, sends monthly to each division superintendent a list showing the name of every freight conductor on the division, with number of claims, if any, charged to him on account of pilferage from train, rough handling, etc. The local divisions of the Order of Railway Conductors have been interested and feel some responsibility in keeping the work of their members upon a plane above the imputation of collusion with pilferage. Seek, my boy, to develop the higher natures of your men and you will be astonished at the response. Let them know that you know what they are doing, and it becomes easier for them to withstand temptation.

Freight claims are a fine example of an exaggerated specialty resulting in unnecessary centralization. The whole proposition can be decentralized for the good of the service. Because the division superintendent can not well settle interline claims of other divisions is no reason why his forces should not settle such local claims as concern his division.

A thorough study of freight claims will bring you early to a consideration of personal injury, stock, and fire claims. The fad has been on many railways to take these items of operating expenses away from their former location in the operating department and give them to the legal department. This exaggerated view of the laws of liability is partly responsible for the growth of the damage suit industry. It is another case of considering a part of the railway at the expense of the whole. We need legal advice and expert knowledge. The true function of the expert and the specialist is to see how much working knowledge he can impart to the layman for everyday use and reserve himself for the real complications which, if his tutelage has been sound, the layman will quickly recognize and bring back for expert assistance.

Not long ago I happened near a freight wreck. One of the cars in the ditch contained an emigrant outfit in charge of a man. This man was bruised, but not seriously injured. With the superintendent and the wreck train came a specialist, a claim adjuster for the legal department. He could settle only the personal injury. The damage to property was a freight claim and belonged to another department, the accounting, not formally represented at the impromptu function, and over which the superintendent as master of ceremonies had no jurisdiction. The various items of operating expenses involved on this occasion were in a decidedly diverged condition. What the spiritualist medium calls the control was in this case the office of a busy president some fifteen hundred miles away. Of course, the company spirit and common sense guided the superintendent, and he made the best of circumstances; perhaps risking criticism and censure for crossing sacred departmental lines. What do you think of a system that breaks down in emergencies? Is not an emergency a test of a system, a proof of its elasticity? Can we develop the highest efficiency of superintendents when we, the executive and general officers, place upon them the burden of departing from a system that fails to meet their practical problems? Is it not a species of unconscious administrative cowardice for boards of directors to impose implied and practical responsibility without conferring corresponding authority? Can such questions be ignored as exceptional, trifling, and captious? Do they not reach to the heart of railway organization and efficiency? Will the railways correct such errors themselves, or will they await once more the remedy by legislatures and commissions?

If a study of conditions does not convince you theoretically that one claim bureau should handle freight, stock, fire, and personal injury claims—in short all claims covering injuries to persons and damages to property—go down on the Chesapeake & Ohio and watch them do it practically. Instead of several specialists duplicating each other's itineraries, you will find some all-round claim men doing a variety of practical stunts. When they do strike a really different and highly technical case, they utilize the services of their best specialist in that particular line, not infrequently the general claim agent himself. Overcharge claims are very properly handled under their traffic auditor, being a matter of correction and not of operating disbursement. Were it up to me, I would make the general claim agent an assistant general manager, so that in claim matters he would have rank and authority superior to the division superintendent's. The division claim agent I would make an assistant superintendent, so that in claim matters he would have rank and authority superior to all employees on the division.

On this last division feature I once convinced my old friend, Cant B. Dunn, by a long, practical test.

Affectionately, your own, D. A. D.

NEW SIGNALING AT WASHINGTON; P. B. & W.

One of the most complete and modern signal installations in the country was recently put in service by the Pennsylvania (Philadelphia, Baltimore & Washington), between the south portal of the Capitol Hill tunnel and the Potomac River bridge, Washington, D. C. The installation consists of two electro-pneumatic interlockings and 13 electro-pneumatic automatic signals. The interlocking machine at Second street and Virginia avenue has 18 working levers operating 49 functions; the machine at Fourteenth street has eight working levers operating 35 functions.

Speed signaling, as recommended by the committee on signal practice of the Railway Signal Association, was installed throughout. The interlocking home signals have three arms with vertical lights, the distant signals two arms with staggered lights, the automatic signals one arm and two staggered lights, the dwarf signals one arm and one light. All signals governing in the direction of traffic indicate the position of the next high signal in advance; and all signals operate in the upper right-hand quadrant.

Fig. 1 is a plan of the tracks embraced in this installation. It is broken into three parts, the west end (Potomac River) being at the upper left hand. The different parts of the engraving are to be connected as indicated by the letters A and A^1, B and B^1. Fig. 2 is a view at the Fourteenth street interlocking, looking west, and Fig. 3 shows signal cabin "VU" and the signals near it. Electric detector approach and advance locking are provided for all switches, and there are no detector bars. Alternating current is used for operating the track circuits and for controlling the automatic signals.

The electrical energy and the compressed air are obtained from the power house of the Washington Terminal Company, situated about two miles north of the tunnel portal. Emergency electrical energy taps in the local electrical company's lines are provided for use in case of failure of the main supply.

The electrical energy is transmitted at 2,200 volts, 60 cycles, over a No. 6 B & S flexible twin conductor cable. A lead-sheathed cable is used from the power house to the first interlocking, and from this point a cloth covered, jute filled rubber insulated cable is used. The lead cable is run in terra cotta conduits from the power house to the south portal of the tunnel and in galvanized iron pipe from that point to the first interlocking. The cloth covered cable is laid in wood trunking about 2 ft. below surface. The trunking was treated with creosote. About one-half inch of pitch was placed in bottom of the groove of trunking. The cable was then laid in and the groove filled with pitch. A cross section of the trunking and cable is shown in Fig. 5.

The 2,200-volt current is stepped down to 10 and 110 volts at eight different transformer locations. A sectionalizing switchboard panel is placed in the 2,200-volt mains at each transformer location. The switches on these panels are so arranged that with power at both ends of the line any section of the cable

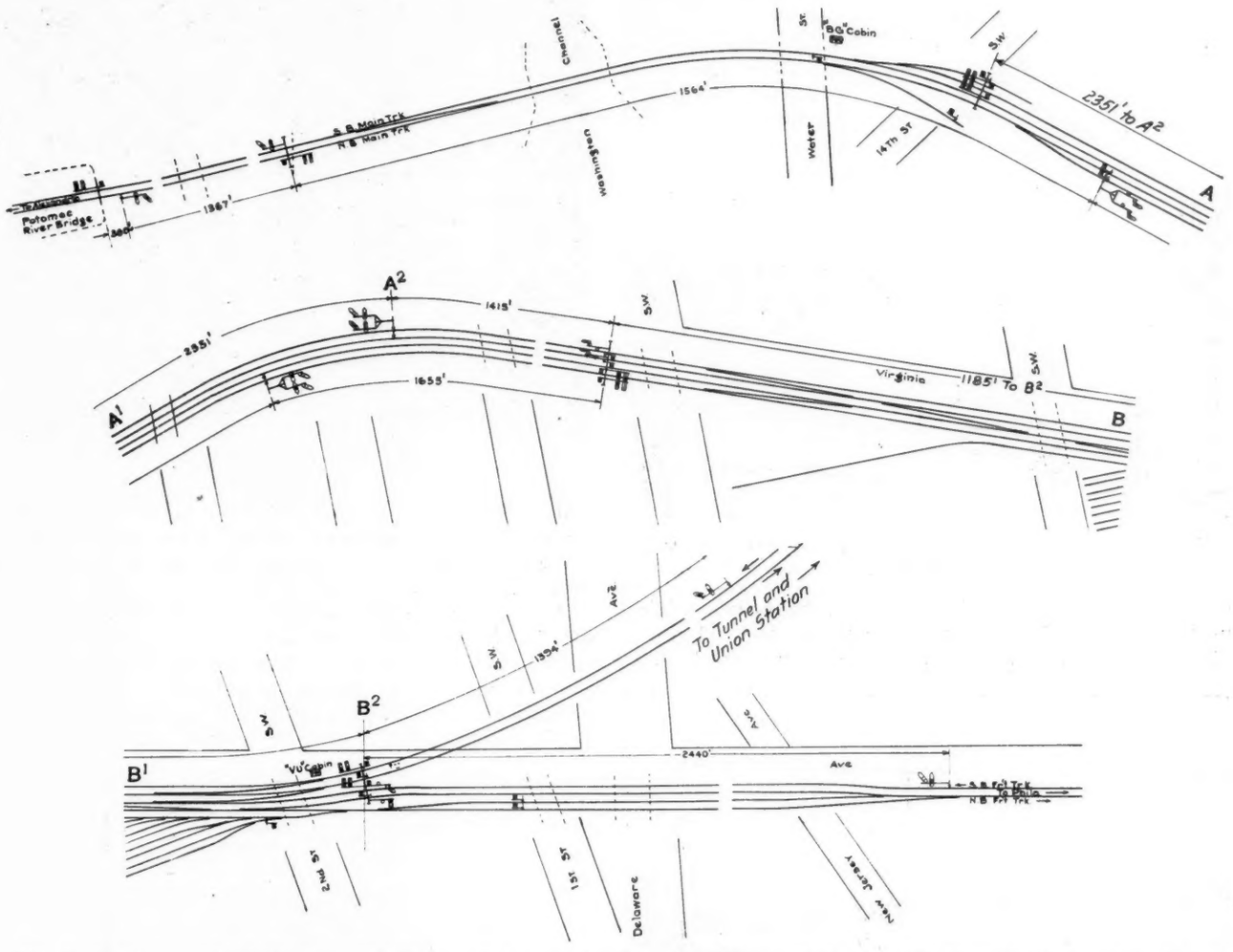

Fig. 1—Arrangement of Tracks and Signals between the Potomac River and Capitol Hill Tunnel, Washington, D. C.; Philadelphia, Washington & Baltimore.

Note.—The upper portion of drawing at A joins the second portion at A^1. The second portion at B joins the third portion at B^1.

between transformer locations may be cut out of service without affecting the operation of any signal. The sectionalizing panels and transformers are placed in cases, made of reinforced

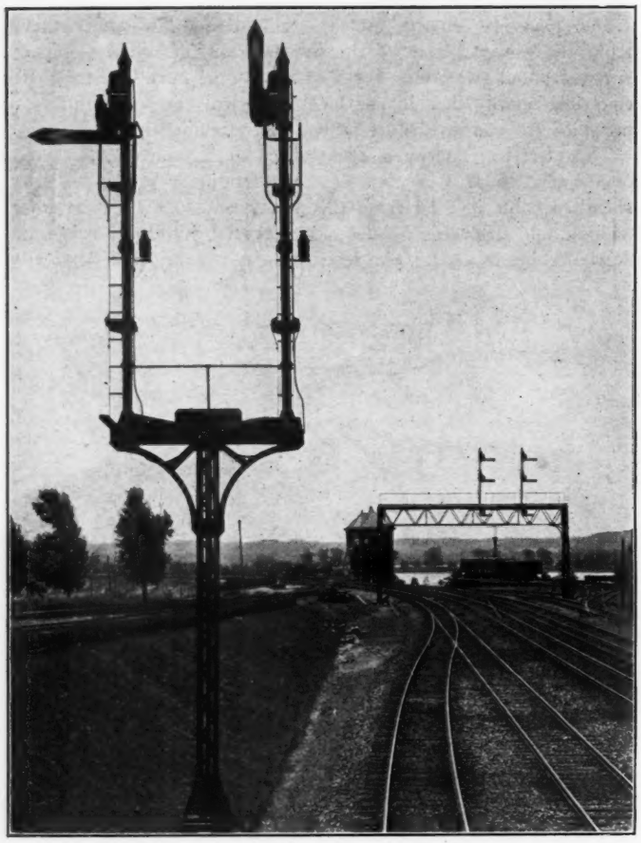

Fig. 2—Signals at B G Interlocking, Fourteenth Street, Washington.

concrete, which are divided into two parts, the upper part being used for panels and the lower for the transformer. There are 44 track circuit sections in the installation, averaging 775 ft. in

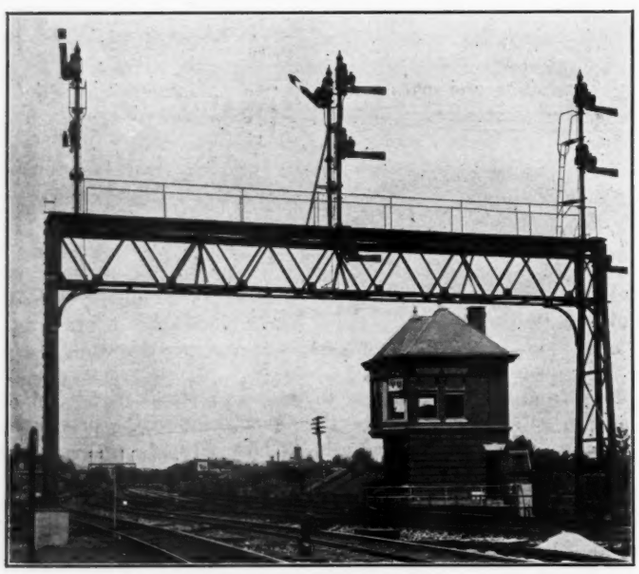

Fig. 3—Signals and Cabin at Second Street and Virginia Avenue.

length. The longest is 2,400 ft. long and the shortest 93 ft. The sections are fed from the 10-volt taps of the transformers. Leads of No. 6 wire are run from the transformers to bus bars in the distributing boxes. The track feeds are tapped to the bus bars through a resistance tube. These tubes have three units of resistance, 0.5 ohms, 0.75 ohms and 1.25 ohms. Fig. 4 shows a view of the distributing boxes and Fig. 6 of a relay box. The track relays are of the galvanometer type. The

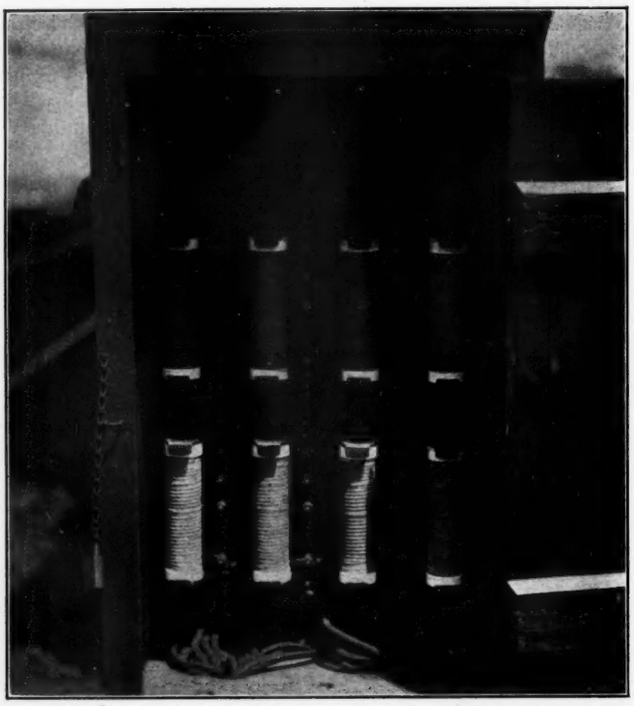

Fig. 4—Distributing Box.

fields of these relays are connected to the 110-volt bus bars with a non-conductive resistance of 140 ohms in one of the leads.

The voltage across the rails at the feed end averages 2.4 volts and at the relay end 1.85 volts.

The signals are of the top post mechanism type. The home and dwarf signals are controlled by direct current magnets operating from a 14-volt storage battery. The distant and automatic signals are controlled by alternating current magnets operating on 110 volts. The stick circuit for the semi-automatic signals is controlled by slow-acting relays to prevent the signals

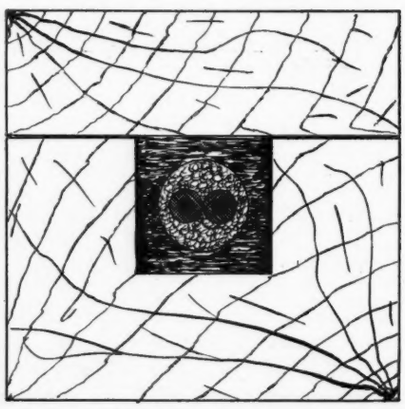

Fig. 5—2200-volt Wires in Trunking.

being thrown to stop by a momentary interruption of the power supply. Each signal is lighted by one lamp of two candle power which burns continuously.

Directly over each lever of the interlocking machines there is a small electric light which indicates to the signalman when the block or the track circuit section over which signal indications are given by means of that lever, is clear.

The interlocking and signal material for the installation was furnished by the Union Switch & Signal Co., and the wire by the Kerite Insulated Wire & Cable Co. The work was installed by the railway company's force under the supervision of W. L. Smith, supervisor of signals of the Maryland division. The cost of the whole was $60,791, including the cabins, which are of brick, costing about $4,731 each. The four-arm bracket posts cost in place about $773 each. The average cost of the four-track signal bridges complete with four two-arm signals in place is $2,111.

In the original plans for this installation signal bridges were provided for in all cases. One of the new bridges was put up

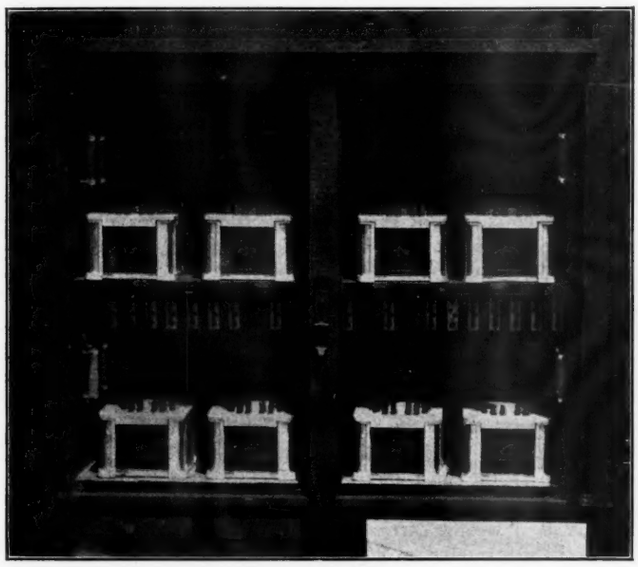

Fig. 6—Relays.

south of Seventh street, at which point there is a parkway alongside of the tracks. People residing in the vicinity objected to this bridge as unsightly and as obstructing their view, and at their request the railway company substituted the bracket post in place of the bridge.

Putting the power line (south of "VU") in trunking was to some extent experimental, with the view of obtaining the cost, life and efficiency of this method of installation. The cost of this line, including the cloth-covered cable with two No. 6 B & S gage copper wires, was about $35 per 1,000 ft., which it is estimated is much cheaper than lead-covered cable in either galvalized iron pipe or any other method of conduit construction.

FOREIGN RAILWAY NOTES.

The English government has provided $900,000 for the construction of the Jinja-Kakindu Railway, Uganda Protectorate, Africa.

A Cologne paper calls attention to the fact that the 12th of May last was the 30th anniversary of the opening of the first electric railway. This was an experimental line about a mile and a half long, from the Lichtenfeld military school to the Anhalt station in Berlin, equipped with a single car with seats for 12 passengers, built by the firm of Siemens & Halske. The speech made by Dr. Siemens on that occasion is remarkable for a modesty not often shown in introducing new inventions. "The child born today," said he, "is a sturdy little fellow, with abundant vitality. I think he will make out to live. But he has the diseases of childhood yet to meet, and as yet has not even cut his teeth. We may be glad, however, that the babe has at least come into the world. As to what will become of him, whether he ever amounts to anything, we must wait to see." We have waited; and we have seen.

TRAIN DESPATCHERS' ASSOCIATION.

The twenty-fourth annual convention of the Train Despatchers' Association of America was held at Baltimore, Md., June 20. 21 and 22. There was an unusually large attendance. From the Atchison, Topeka & Santa Fe sixteen men were present, and the representation otherwise was from a larger number of roads than usual. The business report showed a cash surplus in the treasury of $321 and invested funds amounting to some $1,500. There was a decrease in the membership of six members, leaving a total membership of 932, while 42 new members were elected at the meeting, making a total membership of 974.

An amendment to the constitution was submitted changing the method of amendment which threatened, if adopted, to open the door to radical changes in the association, but it was defeated by the decisive majority of ninety-one to one, and the character of the association as an organization which prohibits discussion of the labor question in any form was emphatically reaffirmed.

The report of the train rules committee was the main feature of the convention and evoked vigorous debate on some of its features, which were referred back to the committee for further consideration.

The convention held two sessions on Tuesday, and one short session on Wednesday morning preceding a steamboat trip to Annapolis, and return. An evening session was held after the return from Annapolis which continued the debate and disposed of the report of the train rules committee. The following six proposals recommended by this committee were approved by the association.

Under train-order form G, example 3, the explanation should be amplified by the addition of the proviso that if the extra be a passenger train, the track must be cleared by the time the extra is due to leave the last station in the rear. This would make the practice under form G conform to the practice under general rule No. 86. The paragraph next to the last in the explanations of form H should be included in the double track rules as well as the single track.

Under form B, example 3, it would be better to provide that the second named train must run with caution and at such speed as to avoid accident to the first named train. It is believed that this would be quite as safe as the provision now in force. In most cases the speed of the leading train must be guessed. The committee believes it would be well to provide under this example that the form should be used only when the superior train is indefinitely late, and that an order of this kind should be replaced as soon as practicable by form E. The committee recommends the omission of the word "until" in example 4, form E, and the word "leave" in example 3, form G, except against the first item in the order. The letters "A. M." and "P. M." might also be omitted, except as they are used in time-table schedules.

In the train despatcher's clearance form, the committee recommends the use of the following formula: "All trains due at G *at or before,*" etc. A clearance form ought to be used in all cases where there is no register, but where trains have to be cleared before starting. The committee recommends the adoption of the "Q" response, said to be in successful use on the Rock Island lines. The requirement is that operators receiving orders, *except the one first repeating*, shall listen to and compare their own copy with the first repetition and preface their own repetition by "Q," thus informing the despatcher that they have made the comparison. The present rule in regard to listening is not very generally observed, but the committee believes that the proposed requirement can be obeyed without difficulty.

Several recommendations failed to receive approval. The committee recommends the introduction of a paragraph allowing different forms of orders to be combined, when practicable, except form K, provided each specified movement directly affects the train first mentioned in the order. This rule is proposed as a restrictive measure, to keep despatchers from making all sorts of combinations; but the association was not ready to take action.

Form K is that one used for annulling trains. This the committee would never allow to be combined with any other form. The committee proposed that rule No. 221 be modified so that after delivering a clearance card the train should be allowed to proceed without the clearing of the signal; also the common practice of allowing a train to pass the train order signal in order to do the station work should be definitely set forth in the rules. But on this also the association refused to commit itself. The same result followed a proposition to change the third example under form G.

On Thursday the convention held two sessions and voted to appoint a train rules committee of four members to act hereafter in conjunction with the proposed train rules committee of the Association of American Railway Superintendents, the president and secretary continuing to be ex-officio members of the committee.

The election of officers resulted in the selection of J. B. Ford, chief train despatcher of the Santa Fe, Clovis, New Mexico, as president. T. W. Kane (N. P.), Livingston, Montana, was elected vice-president. J. F. Mackie was re-elected editor. J. P. Finan (Santa Fe), Needles, Cal.; T. D. Dellmin (L., S. & M. S.), Youngstown, Ohio; W. H. Whitaker (B. & O.), Baltimore, and H. M. Conley (B. & O.), Columbus, Ohio, were elected members of the executive committee, the last named being a re-election. There was some bitter opposition to the election of Mr. Mackie as editor, but it was at long range and ineffective. Communications were read from 35 despatchers, threatening to leave the association in case of his re-election. When the matter came to a vote, however, Mr. Mackie received a unanimous endorsement.

Louisville was selected as the next place of meeting, and the date was fixed for June 18, 1912.

Messrs. Daniel Willard, President of the Baltimore & Ohio, Charles Selden, superintendent of telegraph of the same road, and A. J. Wells, general manager of the Santa Fe Coast lines, were elected honorary members.

The meeting was the best attended and most enthusiastic held by the association since 1893.

CAR CAPACITY AND FREIGHT RATES.*

BY J. F. STROMBECK.

By car capacity is meant the amount of freight, in terms of weight, that can be loaded into a car. The capacity of any given car may depend upon several conditions. In the first place, the strength of the car limits the weight which can be safely hauled in it, usually varying from 30,000 to 80,000 lbs. The character of the freight loaded is another important factor in determining car capacity. It is possible to load commodities of great densities, as iron, grain, etc., even above the marked capacity, while light and bulky articles, as pleasure vehicles, can usually, even in a 50-ft. car, be loaded up to only 18,000 lbs. Other freight, because of extreme size of each piece, or because of perishability, cannot be loaded without leaving much unoccupied space in the car.

Again, less-than-carload freight cannot be loaded as heavily as straight carload lots. Carriers claim that the weight of the former may fall as much below that of the latter as one to two and even as three to eight. This is so because it is impossible to load miscellaneous freight as compactly as a single commodity, because there is often a lack of sufficient freight to fill a car at stated, regular intervals, and because way freight must be so placed in the car as to permit loading and unloading at all stations.

Finally, commercial conditions may prevent heavy loading of cars. Cannel coal, being used almost entirely for grate purposes, is sold in such small quantities that even though its density is almost equal to that of other bituminous coal, it is seldom, if ever, loaded as heavily as is the latter. Other conditions might be mentioned, but these are sufficient to show the varied influences that affect car capacity.

Car capacity, as a factor in determining freight rates, is an element affecting the cost of performing the transportation service, and as such is of great importance. Commissioner Prouty has said that "in determining what are reasonable rates for carriage of various commodities, no one thing has been oftener or more earnestly insisted upon by the carriers as a controlling element than car capacity."

This factor is important, first, because from the point of view of service it becomes the almost controlling element in determining relative rates on articles of great density, on the one hand, and on light and bulky freight, on the other. Too great importance attached to car capacity will result in an undue disparity in the rates on these two classes of traffic. This will be brought out more clearly later. In the second place, the factor is of much importance in determining carload and less than carload differentials. These differentials, with possibly some exceptions, should be based on the difference in the cost of hauling, and as car capacity is one of the most important factors determining this difference in cost, it necessarily becomes of much importance in determining the differentials.

While car capacity has always been an important factor in determining freight rates for rail carriage, it is constantly increasing in importance. About two decades ago most cars had marked capacities of from 20,000 to 24,000 lbs., while today 80,000 is common, and many have 100,000 lbs., capacity.

Car capacity affects the cost of hauling in that the dead weight, that is, the tare weight of the car, carried per 100 lbs. of freight decreases as the load increases. If the weight of the car is 30,000 lbs., and the weight of the load is 20,000, there are 150 lbs. of dead weight carried for each 100 lbs. of freight, but if the load is increased to 40,000 lbs. only 75 lbs., or one-half as much, dead weight is carried for each 100 lbs. of freight.

A superficial consideration of this has led to the error of holding that a rate ought to decrease as the weight loaded is increased; if not in exactly the same ratio, nearly so. Traffic managers have said time and again that each and every carload should pay approximately the same amount of revenue as every other carload as far as it is possible to make them do so; and some hold that the carload should be made the unit of shipment upon which to base charges, rather than 100 lbs. or a ton. A study of those commodities which take more than one classification according to the minimum weight loaded, will give considerable evidence that carriers are attempting to carry out such a policy. That this policy is subject to criticism will be shown shortly.

The following case is a typical one illustrating the method by which reduction in cost by increased car capacity is figured. It is an ideal case because all other elements but car capacity, both from the point of view of cost of service and value of service are eliminated. Commissioner Prouty used it in *The Planters' Compress Company Case*, 11 *I. C. C. Rep.* 382. He said:

"An ordinary box car weighs perhaps 36,000 lbs. The total weight of that car loaded with square bale cotton would be 61,000 lbs. and the carrier would receive, at a rate of 30 cents per 100 lbs., $75 for the service, or about 12.3 cents per 100 lbs. for the gross weight of car and contents. If this same car were loaded with round bale cotton, it would weigh, car and contents, 86,000 lbs. At a rate of 20 cents per 100 lbs. the total revenue would be $100, or about 11.6 cents per 100 lbs. for the gross weight carried. When it is remembered, therefore, that the car in one case earns $100, while in the other it earns $75, it must be evident that cotton compressed to a density which permits loading of 50,000 lbs. to the car is as good business, looking only to the cost of carriage, at 20 cents per 100 lbs., as is cotton which will load 25,000 to the car at 30 cents per hundred."

According to this, as Mr. Prouty also claims later in his argument, loading 50,000 instead of 25,000 lbs of cotton to the car saves one-third of the cost.

Before it is possible to point out the fallacy in the above argument, it will be necessary to briefly consider railway costs. These costs may be said to be of two kinds, direct and indirect, sometimes called variable and constant expenditures, respectively.

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NOTE:—A portion of the matter in this article is taken from a book by the same writer on "Freight Classification and Commodity Tariffs," which is to be published in the near future by Houghton, Mifflin & Company, and is used with the consent of the owners of the copyright.

Direct costs represent such items as expenditures for fuel, water, etc.; wages of engineers and trainmen; wear and tear on rolling stock and interest on money invested therein; payments for repairs of roadbed and track made necessary because of wear from hauling and other similar items. Indirect costs include expendiures for maintenance of way caused by the rusting of rails, rotting of ties and washing out of road bed; repairs and renewals of fences and road crossings; wear and tear on stations because of the action of the elements of nature; expenses to replace cars and locomotives that have become out of date; a large part of station expenses; wages of switchmen, flagmen, watchmen, etc.; the expenses of the general office, and fixed charges, including interest on funded debt, interest on interest bearing current liabilities, rents paid for lease of roads, taxes, etc.

There is a marked difference between these two kinds of costs. Direct costs depend upon the amount of business done and vary directly, though not necessarily in the same ratio, as the volume of traffic carried. The indirect costs, within certain limits, remain about the same irrespective of the amount of business done. They correspond to what in some industries are called overhead costs. It is of the greatest importance that these two kinds of cost be kept clearly in the mind throughout the following discussion, and, in fact, in all considerations of freight rates. A failure to clearly recognize these two kinds of cost has resulted in much severe and unjust criticism of the railways, and many valueless discussions of rate problems.

Judge Noyes, in "American Railroad Rates," has shown that approximately 40 per cent. of the total expenditures of the railways of the United States represent direct costs and 60 per cent., indirect costs. As these total expenditures are exclusive of dividend payments, something less than 40 per cent. of an average rate, under average conditions, goes to cover direct costs. With this explanation of transportation costs in mind, it will be possible to discover the fallacy in the use of the factor car capacity as in the case cited above.

By putting our case in a different form it will be easier to analyze. If 50,000 lbs. are loaded into two box cars, each weighing 36,000 lbs., the gross weight is 122,000 lbs. If the same weight is loaded into one car the gross weight will be 86,000 lbs., and the hauling of 36,000 lbs., or 29.5 per cent. of the weight, is saved. This seems on hasty consideration to be a saving of nearly one-third in the cost of transportation. Such is, however, not the case. The saving does not at all affect that something more than 60 per cent. of the rate which goes toward indirect costs and dividend payments. Furthermore, not even all of the items of direct cost are affected by the saving from hauling one car less. Such expenses as handling less-than-carload freight at freight houses and other terminal expenses, which are included in the 40 per cent. for direct costs, go on the same as before. It might, therefore, be safe to say, after making allowance for dividend payments and items of direct cost which are not affected by car capacity, that prossibly one-third of an average rate, under average conditions, is affected by the element car capacity, and the saving from the loading of 50,000 lbs. of cotton instead of 25,000 lbs. results in a saving of 29.5 per cent. of one-third of the rate, or approximately only 10 per cent. of the rate. It is evident if the doubling of the weight loaded merely cause a saving of approximately 10 per cent., an increase from say 30,000 to 40,000 lbs. in a load would result in a considerably smaller saving, which would possibly amount to one cent were the average rate 25 cents per 100 lbs. This certainly makes car capacity seem less important than it is usually considered.

The point in question might be further elucidated. The total cotton crop of the country ought to bear a certain amount of the indirect costs of all transportation, or in other words, of the aggregate constant expenditures of the railways, each unit shipment bearing its share. This amount that each unit shipment contributes toward indirect costs should clearly remain the same whether 25,000 or 50,000 lbs. are loaded to each car. If it is decreased, the carriers will receive just that much less net revenue for the transportation of the cotton crop than that commodity should pay. This is, of course, true only provided that the rate for the 25,000-lb. minimum is reasonable. Such a deficit must be made up by other traffic or reduce the profits of the carriers. Therefore, in varying the rates with the weight loaded, it should always be remembered that a portion of the rate goes toward paying indirect costs, and should remain constant irrespective of the weight loaded into a single car, and that the only costs that is affected is that of the actual hauling of the freight. This is also true for carload and less-than-carload differentials. The amount that 100 lbs. of any commodity should contribute toward indirect cost should be the same whether those 100 lbs. are carried as a part of a straight carload shipment or as a part of a less-than-carload lot. If an increased car capacity is accompanied by so great reduction in the rate that the amount which each 100 lbs. contributes toward the indirect costs is reduced, the present tendency toward greater car capacities is surely a poor business policy for the carriers. Sometimes one is led to question whether or not traffic managers are aware of this.

The above clearly shows that a car should not pay about the same revenue whether loaded with a heavy load or a light one. If the 30-cent rate on cotton is an average one, about 20 cents of it goes to pay indirect costs and dividends. If 25,000 lbs. are loaded, $50 will be earned for that purpose, but if 50,000 lbs. are loaded $100 must be earned to cover the indirect costs assessable against this particular amount of cotton. With a minimum of 25,000 lbs. about 10 cents per 100 lbs., or $25, are needed to cover the direct costs. If 50,000 lbs. are loaded there is a saving of 29.5 per cent. of this part of the rate, or about 3 cents, leaving 7 cents per 100 lbs., or $35 for the entire load, needed to cover the direct costs. Thus, if a carload of 25,000 lbs. reasonably earns a gross amount of $75 for the carrier, a load of 50,000 lbs. should earn a gross amount of $135. It can hardly be said that these two amounts are approximately the same. This also shows that the claim by some that the carload should be taken as a unite for determining freight charges instead of the 100 lbs., or the ton, cannot be grounded in reason. It would result in an enormous discrimination in favor of the shippers of heavy carload lots.

There is an element that further reduces the supposed saving in direct costs resulting from increased car capacities, which ought to be mentioned. An 80,000-lb. capacity box car with a steel underframe weighs about 44,000 lbs., while a box car having a capacity of 40,000 weighs about 30,000 lbs. Hence, while in the case of the former car a greater number of unit shipments of 100 lbs. each are hauled over which to distribute the dead weight, there is also a considerable greater quantity of dead weight to be distributed. The dead weight per unit shipment does not increase in the same ratio as the weight loaded increases in those cases where the increased capacity necessitates a stronger and therefore heavier car. It is even conceivable that at some point there is an increase in the dead weight per unit shipment instead of a decrease. This fact materially reduces the 10 per cent. saving shown above.

There is another matter to which attention should also be called. In the above case it was assumed that the 30-cent rate on cotton for a 25,000 minimum was an average rate. In the case of low-grade and cheap commodities a much smaller part of the rates goes toward indirect costs, and therefore it is possible that a very large per cent. of a rate is affected by car capacity. On the other hand, if the rate applies on valuable freight it is probably that considerable less than 30 per cent. of it is affected. Thus, car capacity is of much more importance for low rates than for high ones. This is also true of rates for long hauls as compared with those for short hauls, for in the case of the former the part going to indirect costs is often a smaller per cent. of the rate than in the case of the latter.

The evils resulting from a failure to recognize properly the factor of car capacity are significant, to say the least. If given too much importance, it leads to an undue difference between

rates on light and bulky articles and on those which are heavy and compact. A study of classifications indicates that in practice this difference is considerably greater than it ought to be. This is an unjust discrimination against light and bulky freight. Again, as car capacity is one of the most important elements in determining the difference in the cost of hauling carload and less than carload traffic, these differentials may become too great and cause an undue prejudice in favor of the large shipper who makes carload consignments. The small, less-than-carload shipper is made to bear part of the burdens which rightly belong to his stronger competitor.

Thus, a failure to distinguish between the direct and indirect costs of railway transportation has led to error in the application of the element car capacity, and the present tendency to increase car capacities causes a decrease in the carriers' revenues which go to play indirect costs. At the same time, light and bulky articles have been given too high rates as compared with those of great density and less-than-carload shipments as compared with carload lots.

AMERICAN ASSOCIATION OF LOCAL FREIGHT AGENTS.

The annual meeting of the American Association of Local Freight Agents, was held at Kansas City, Mo., on June 20, 21, 22 and 23. The following are abstracts of some of the reports presented by local associations:

VOLUNTARY PAYMENTS OF SWITCHING (KANSAS CITY ASS'N).

A special committee appointed for the purpose investigated the switching schemes in use all over the country and made an elaborate report at the Montreal meeting. Its report treats of six different schemes and covers forty-five pages in the official minutes. All of the different plans which have been suggested from time to time contemplate that the switching line shall depend upon its own resources only to collect the switching revenue due it and none of them provides for any assistance to be furnished by the paying line. If the switching line fails to ask for the money it receives nothing for the service performed. Way-bills may be issued for switch cars and any of the various checks suggested may be applied, but still care will be missed and the switching lines will lose much revenue in consequence. The inherent principle that prompts every man who works out a new scheme is the desire to obtain an accurate check on switching revenue and the primary object of every plan of checking switching is to insure the collection of revenue on all cars switched.

The local offices have forces of men employed to check interchange reports, switching orders, yard checks, cards removed from cars and all other records having any bearing on switching movements of cars. The accounting departments have forces of men in the field to check the stations to enforce proper checks being made by the latter. Bills for missed switching are made up from time to time and the paying line spends much time, energy and money in digging out old records and checking the supplementary bills made by the switching line. All of this is done and the local offices suffer much criticism because they fail to pay their known obligations in the first place. Every railway wants to pay all the switching revenue that is due every other railway, therefore why not carry out the policy of our managers and pay the switching lines for all cars switched, using the most simple and direct method? I believe that we have solved the problem at Kansas City.

At the time of ordering a car to a switching line the road carrying line writes up the way-bill on a statement of billing or other form, making whatever number of copies is needed, using one column to show the amount of switching due the switching line. Outbound business is written up in the same manner, showing the outbound way-bill reference. At the end of the week the statement is footed and a draft is issued to the switching line for the amount due it, which is paid in the weekly settlement. One copy of the statement is delivered with the draft to enable the switching line to properly apply the money. Another copy is sent to the accounting department as authority for the payment and the transaction is closed.

The switching line may continue all of its checks and safeguards to insure the proper charge being made for cars handled and will render bills for all cars missed by the road carrying line, which should be paid in the next weekly settlement. The switching line posts switching items received in the same manner that it applies prepaid and freight received items. Cars switched locally are settled for in the same manner, the originating line assuming the same position as the road carrying line. The voluntary settlement gives the switching line the double check, so much needed. When one line misses a car the other will catch it. The switching desk in each local office is supplied with the switching tariffs of the other lines or a statement of rates compiled from the tariffs which enables it to make its payment at the tariff rate. This plan has been in effect here for nine months and we are well pleased with it. The longer we use it the better we like it, and we commend it to other switching centers.

HANDLING L. C. L. FREIGHT AT JUNCTION POINTS (LOUISVILLE ASS'N).

The practice is indulged in more or less by nearly all present. Have we reached the state of perfection expected by our several managements? How can we overcome the irregularities so prevalent among us? We must assume that particular attention has been given the practice of loading merchandise cars over junction agents' heads whenever practicable and at the same time, emphasize the necessity of remodeling instructions from time to time as conditions change, bearing in mind that every shipment so handled—

(1) Decreases time of freight in transit.
(2) Decreases cost of handling.
(3) Decreases liability of damage, thus preventing claims.
(4) Decreases transfer charges at junction points.
(5) Reduces switching and yard expenses.

Originating points should first arrange to load to break bulk at points as near ultimate destination as their tonnage will justify, regardless of the number of junction points interested.

The same practice can be indulged in by receiving agents when the tonnage warrants, thus enabling us to reduce to a minimum that which gives us the most trouble, namely, "The cross-town movement."

Those of us who are favored with an up-to-date, responsible and well-organized transfer company will at once favor the use of same for the cross-town work, but those less fortunate will be fully as enthusiastic in favor of the use of the car system. Both have their advantages and disadvantages. Which is the preferable?

In using the transfer system, we find in its favor, generally speaking:

(1) The saving of probably twenty-four hours in time consumed in transit.

(2) A greater degree of accuracy in getting the freight to the proper depot, as it becomes the object of two individual checks instead of one.

On the other hand, we find favoring the car system, speaking in a general sense:

(1) Saving of transfer charge expense.
(2) Eliminating of a third party in handling the business.
(3) Saving of office labor in properly presenting transfer bills for settlement.

In order to enable transfer stations to make package cars to stations on foreign roads, and far-removed points on such lines when tonnage is sufficient to justify it, we recommend the adoption of interline billing. By doing so, the waybills will indicate the route freight is to travel and shipments would not be held up by originating line for rebilling, as is now largely the practice on business moving through the Ohio and Mississippi gateway into the South and West and through Chicago for the North and Northwest.

The following officers were elected to the association for the ensuing year: President, Charles E. Cochrane, Baltimore, Md.; first vice-president, George B. Ager, Boston, Mass.; second vice-president, H. J. Griffin, Mobile, Ala.; secretary, R. O. Wells, St. Louis, Mo.; treasurer, C. E. Fish, Cincinnati, Ohio.

PACIFIC COAST LOCAL FREIGHT AGENTS' ASSOCIATION.

The annual convention of the Pacific Coast Local Freight Agents' Association was held at San Diego, Cal., June 20-22. The territory of the association includes California, Oregon, Washington and British Columbia, and members from every important city in these states were present, making it one of the most successful meetings in the history of the organization.

Sessions were held both day and evening on all three days. On the twenty-second the meeting was adjourned at noon, to afford the members an opportunity of visiting Tia Juana, on the border line, and witnessing a battle between the Mexican Federal troops and the rebels which was taking place.

The following officers were elected for the ensuing year: President, W. J. Hardy, San Francisco; vice-president, T. W. Pate, Los Angeles; secretary, F. P. Hanlon, Seattle; treasurer, W. Merriman, Portland. It was voted to hold the next annual convention at San Francisco.

LEGAL ASPECTS OF SYSTEMATIC COMPENSATION FOR INDUSTRIAL ACCIDENTS.*

BY CARMAN F. RANDOLPH.

Dismissing state accident insurance as not, at present, in question, and considering compensation at the employer's charge, I am of the opinion that he cannot be affected with an absolute liability and a fixed indemnity for all industrial accidents. If the courts shall decide otherwise (and I remark in passing that a denial of legislative power in a few states would tend to check its application to competitive industries in neighbor states), they must, I think, enunciate a new principle broad enough to draw contributions from workmen, if this shall be expedient. If the employer may be required to help the workman, the workman may be required to help himself, and so far as the cost is shifted to the public, the workman is as likely to be recouped by higher wages as is the employer by higher prices.

A compulsory rule need not be applied immediately, or ever, to all employments; but it must be, potentially, applicable to all. No employment can plead constitutional exemption because of its relative freedom from danger—the "dangerous trades" are not alone subject to the obligation. No employer can plead exemption because of his pettiness—the obligation is imposable upon rich and poor alike.

The compensation rate must be moderate and not confiscatory, and since all employers may ultimately be gathered in, and since the rate basis must be uniform, the incidence of an initial burden should be estimated in view of its potential imposition upon all sorts and conditions of employers, and not simply by the standing of those at first affected.

In planning the administration of a compensation law we must reject, as unconstitutional, the compulsory association of employers. Instead of the collective responsibility of the German system, we must impose the individual responsibility of the British system, though we should improve upon this by allowing responsibility to be shifted by insuring in an approved company or voluntary association, as is the rule in France.

There is reason to fear that in many, if not most, of our states, the summary procedure so essential to the useful operation of a compensation law will be embarrassed by an indefeasible right to trial by a jury, with its delay, expense and uncertainty.

The simple motive of a compulsory compensation scheme cannot be simply effectuated. Complexity is its dominant note, and it should be observed in passing that the New York and, more markedly, the Montana and the Maryland legislatures have, in straining for simplicity of procedure, but drawn attention to the insistent complexities they would fain ignore.

Even if the legislature may lawfully decree the naked principle of compulsory compensation, the practice is likely to be sufficiently embarrassed by constitutional restraints and directions to preclude the adoption of a thoroughly satisfactory scheme.

VOLUNTARY COMPENSATION.

In the compulsory principle of the European compensation schemes be, as I maintain, repugnant to our institutions we may, nevertheless, accomplish, by voluntary methods, a substantial measure of systematic compensation. Voluntary accident relief has already made fair progress. Besides a widespread proffer of medical and hospital service to injured workmen we mark a number of schemes founded by employers to provide accident indemnity alone or in conjunction with sickness or old age relief. Some involve workmen's contributions. In others the employer bears the whole cost, and among these the most notable of the purely accident schemes are those recently formulated by the Steel Corporation and the International Harvester Company. To the objection that few employers are likely to make a free-will offering to their employees I reply that the voluntary method I have in mind would not be inspired by philanthropy, though by no means lacking the humane spirit. While the legislature cannot, in my opinion, strip the master of all defences to a suit for damages it may so narrow them as to encourage the bringing of suits with their inevitable delays, uncertainties, irritations and waste. The mere holding of this power in leash suggests a special motive for employers to volunteer compensation schemes in the hope of thereby discouraging its exercise.

Voluntary compensation may, I believe, be substantially promoted if the legislature shall discard the idea of threatening employers with more litigation if they reject it and hold out, instead, the promise of less litigation if they embrace it. And we derive the principle of persuasive legislation from a rule embodied in the best of the foreign laws—the master who is bound to systematic compensation is relieved from all liability in suit except when the accident is due to his culpable act or neglect. This is the complement of the general rule that a workman shall not have compensation for an accident due to his wilful act. The absolute fairness of this position is evident to all who are not bemused by the notion that continued subjection to damage suits somehow tends to make the master more careful and somehow maintains the dignity of the workman; but such persons have really no business to advocate systematic compensation at all, for if this is not better than the lottery of litigation it should be rejected. If it is better it should discourage litigation except when public policy commends this for the punishing of culpable masters.

Let the legislature declare that an employer who has, by a proper plan, obligated himself to pay compensation for all accidents shall be liable in damages only when an accident is the result of his culpable act or neglect, and that the mere institution of a suit shall bar all claim to compensation. This declaration should so discourage suits in all except flagrant cases as to offer a strong inducement for the voluntary plan.

Conceding that this plan would in its best showing leave out a fraction of workmen whom compulsion would have covered (if I rightly estimated the inducement the fraction would not be large), the community might well be gratified with a great achievement, and the fraction would be no worse off than the tens of thousands of employees who are not, as a rule, included in current compulsory proposals. Even if a legislature shall be free to compel systematic compensation, it should prefer the voluntary method which, with compulsory power in reserve, might be more widely commended to employers.

It will be objected that compulsion would gather in more employers than would persuasion, even with the threat of force

*Extracts from a monograph prepared for a railway company.

behind it; but there is every reason to believe that a successful initiation of the voluntary method would promote its extension especially among the so-called "dangerous trades," which are the conspicuous objects of systematic compensation.

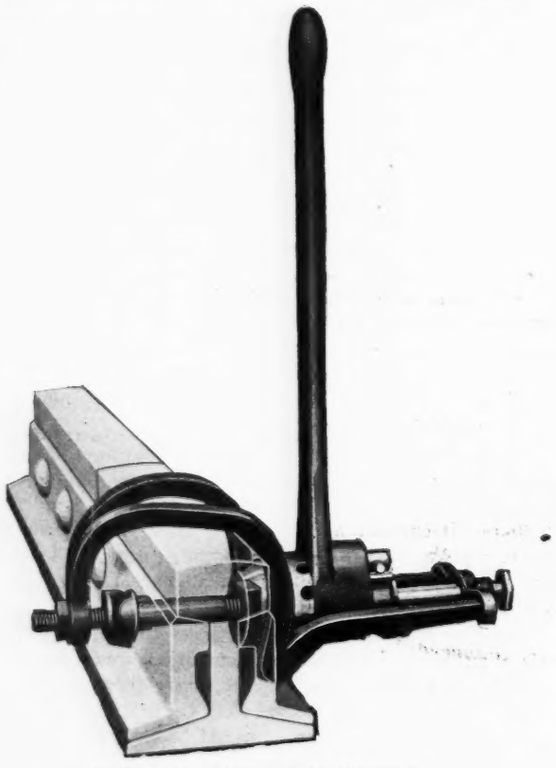
It will be objected that employers would accord a lower compensation than the state would impose; but the voluntary rates must conform to a standard approved by the public authorities. This standard would require reasonable compensation as an invariable but not necessarily the only factor in a scheme.

While uniformity would not be perfectly assured by the voluntary method it would be greatly facilitated. The very simplicity of the basic law I have suggested—the release of the employer from all liability in damages except in the case of his culpable negligence—should commend its enactment in the several states, and, while there would be more room for differences in respect of the standards for a voluntary system, these should be so simple in comparison with the provisions of a compulsory law as to render a wide uniformity attainable.

A compulsory scheme requires an intimate participation by courts, commissions or other public bodies, which means more red tape, delay and expense than under the voluntary method. This needs from the government only recognition and supervision. For the rest it assures the handling of a complicated business matter by a business organization—an assurance quite as valuable from a social, as it is from a business standpoint, for every voluntary arrangement by employer and employee equitable in its nature and executed in good faith improves their relations.

RATCHET TRACK WRENCH.

The National ratchet track wrench, illustrated herewith, is made by the National Surface Guard Company, Chicago, with the idea of overcoming some of the objections found in the older type of wrenches. It is claimed that with this wrench

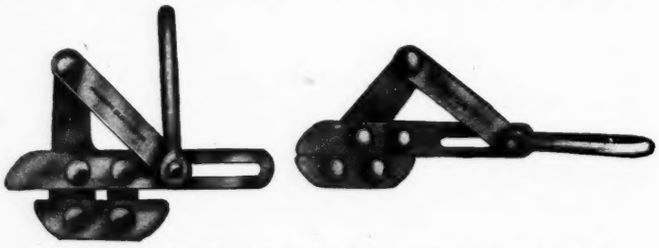


National Ratchet Track Wrench.

three or four times as many nuts may be put on, or removed, in a given time as is possible with the ordinary track wrench. This wrench is made of high-grade steel and weighs from 10 to 13 lbs. according to the rail section and the joint on which it is to operate. The extension frame holds the shoulder of the bolt firmly in position while putting on or removing the nuts. It does not clamp on the rail and can be removed instantly in case of an emergency. The reverse motion ratchet, being an integral part of the socket, gives direct power. The sockets are interchangeable and can be furnished for different nut sizes in both square and hexagon shapes. It is easily adjusted to fit different rail sections, having the regular angle bar type of rail joint. It can be made, however, for any special rail joint desired.

WIRE GRIP WITH NEW LOCKING DEVICE.

The accompanying illustrations show the improved Buffalo grip as made by the Western Electric Company, Chicago. It has a special locking feature which is operated by a turn of the handle. It will lock the jaw in any position, thus enabling the



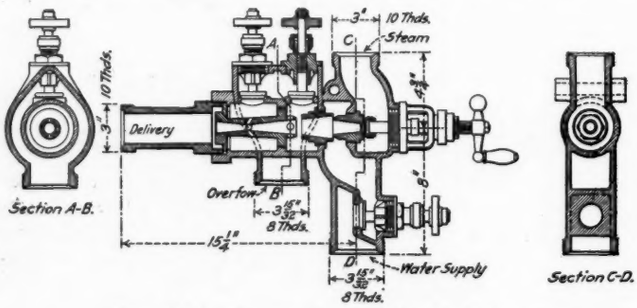
Improved Buffalo Wire Grip in Open and Closed Position.

lineman to insert the wire in the grip easily and quickly. When the handle is pushed down it clamps the wire, and the harder the handle is pulled the tighter the wire is held. This grip is made in various sizes for both bare and insulated wire, and can be supplied with or without pulleys.

LOCOMOTIVE INJECTOR.

An automatic restarting locomotive injector, known as the Twentieth Century injector, is shown in the accompanying illustration. It is the product of the American Railway Supply Company, Conneaut, Ohio. The injector is of simple construction, the parts being so arranged that a ready passage is provided for the overflow at a point close to the water inlet. Independent valves control the cold and hot water overflows. A novel form of forcing tube is provided to permit the passage of hot water to the overflow at the beginning of the operation and to prevent it when the jet has reached boiler pressure.

The injector will work at a boiler pressure of from 20 to 250 lbs., with the same accuracy and without waste of water. It



Twentieth Century Locomotive Injector.

will work as well and with the same velocity from a tank nearly drained as one that is full. A peculiar feature is that it will work promptly in case either the steam or water be turned on first, and will draw water up to 130 deg. F. This injector is interchangeable with others, the standard connection being provided. It is guaranteed for two years, the tubes being made of hardened copper. The injector was invented by L. E. Hogue, of Greenville, Pa., and was later improved by Frank Brosche, of Erie, Pa.

General News Section.

Three masked men stopped an Illinois Central passenger train just outside of Memphis, Tenn., on June 21, and made their escape after forcing the mail clerks to surrender a registered mail pouch.

The Oregon-Washington Railroad & Navigation Company is to use telephones for train despatching between Portland and The Dalles, 90 miles; and has ordered the instruments from the Western Electric Company.

The state prosecuting attorney at Columbus, Ohio, has entered suits in the supreme court of the state, for the purpose of punishing the Pennsylvania and the Baltimore & Ohio railways on a charge of compelling their employees to join voluntary relief associations.

A law of Massachusetts, requiring railways to provide individual drinking cups on trains traveling 30 miles or more, went into effect June 15. Notices are posted in the cars informing the passengers that cups may be had on application to the conductor or baggage master.

The Southern Pacific is now taking eastern freight into San Francisco over the Dumbarton cut-off, and the ferryboats between Oakland and San Francisco will no longer carry overland or interior freight. The Dumbarton cut-off is about 25 miles south of Oakland, and this 50-mile detour is made for the purpose of avoiding the four-mile ferry.

In a recent interview, T. J. Freeman, receiver of the International & Great Northern, indicated that a meeting of the new board of directors, will be called by him before the property is turned over to the new owners, the Third Mortgage Bondholders' Committee, he will be elected president, this being part of the plan outlined at the time of his recent election to the vice-presidency of the Texas & Pacific.

It is reported that Charles L. Ewing, one of the defendants in the recent case of the Illinois Central against certain car repair concerns, has made a settlement with the company of the civil suit to which he was a party, and that negotiations are pending toward similar settlements with the company by F. B. Harriman, former superintendent of the Illinois Central, and J. M. Taylor, former general storekeeper.

Both houses of the Connecticut legislature, after long discussion, have passed a bill to establish a public utilities' commission, to supersede the railway commission. It is said that the bill, which has been passed, has the approval of the governor, and that therefore it will undoubtedly be signed by him. The number of commissioners provided for is three, and they are to be appointed by the legislature on the nomination of the governor.

The commission appointed by President Taft to investigate the cost of transporting and handling second class mail, consisting of supreme court Justice Hughes and Messrs. Lowell and Wheeler, will hold a hearing at New York City, July 18, in the Post Office building. All persons and organizations desiring to appear before the commission are requested to notify the secretary of the commission, C. W. Bell, Colorado building, Washington, by July 10.

At Spokane on the evening of June 7, the Spokane Transportation Club gave a dinner in honor of the railway commission of the state of Washington; about 120 guests being present. Addresses were made by commissioners Fairchild and Lawrence. The Spokane Transportation Club is composed largely of railway officers, but shippers are also strongly represented, and the club is coming to be an important factor in improving the relations between shippers and railways.

The new White Star steamship *Olympic*, 882 ft. long, and the largest vessel in the world, left New York for Plymouth on Wednesday of this week on her first eastbound trip with 725 first class passengers, said to be the largest number of that class ever taken across the ocean on one vessel in regular service. There were more applicants for first class accommodations than the ship could take; and there were about 500 second cabin and 1,000 third cabin passengers. It is estimated that the receipts for tickets for this voyage aggregated $250,000. Sixteen thousand persons visited the Olympic at her dock in New York on Friday and Saturday of last week and (at 50 cents each) paid $8,000 into the seamen's charity fund.

The governor of Pennsylvania has signed the bill which was passed by the legislature of that state establishing a "full crew law," and the law goes into effect within thirty days from the date of signing, which will be about July 22. This law is similar to the full crew laws which have been passed in several states, except that it has an additional provision for the comfort of the hind-end man on trains which have neither passenger car nor caboose. Section 7 of the law says that it shall be unlawful to run any train "consisting of United States mail or express cars without the rear end of the rear car so equipped with exit free from obstruction platform of thirty inches in width, guard rails and steps; also heating appliances to maintain a temperature of sixty-five degrees."

The Illinois Traction System, one of the most ambitious electric railways in the country, announces that, beginning July 1, express trains are to be run between St. Louis and Peoria, 174 miles, with only two stops—at Springfield and Lincoln. Springfield is nearly 100 miles from St. Louis, and Lincoln about 130 miles. It is proposed to run through in 5 hours and 30 minutes, or at the rate of about 32 miles an hour. New parlor cars, so called, have been ordered for these trains, but whether or not the fare will be higher than in ordinary cars is not stated. The company has ordered from the St. Louis Car Company 14 new interurban cars. The company is putting up a new station at Lucas and High streets, St. Louis, 120 ft. x 40 ft., and two stories high. This company has installed automatic block signals on parts of its line and has ordered signals for additional sections, as recently noticed in the *Railway Age Gazette.*

Trains de luxe, special and not special, are now literally too numerous to mention. The Ancient Arabic Order of Nobles of the Mystic Shrine, of Oklahoma City, will leave that place next week, Friday, for Rochester, N. Y., in "the finest train ever sent out from Oklahoma City"; steel sleeping cars, dining car, etc., all electric lighted, and with a conductor and brakeman who are members of the Shrine. Including their wives and a band of music, the company will number 100. The train of steel cars, which is to be furnished by the St. Louis & San Francisco and the New York Central for Texas members of the National Ad Men's Convention, to be held in Boston the last of July, will be the "most modern ever operated in the Southwest." To turn for a moment from outer to inner delights, the latest novelty in the transportation of merchandise is the "Raspberry Special" of the American Express Company, running from New Albany, Ind., to Chicago.

The special commission established last year by Congress to consider the subject of employers' liability and compensation legislation, has held hearings at Washington to discuss the constitional questions involved in legislation of that kind, and has considered a number of arguments presented by lawyers representing the railways. The newspaper accounts of the hearings are not very clear, but from one of the railway counsel who attended we learn that nothing was done except to consider this one phase of the question; namely, the limitations imposed by the constitution. The commission has announced that until it has gathered the statistical information for which it is now asking the railways, it will not be in a position to consider any particular form of legislation. Representative Sabath, of Illinois, has introduced a bill on the subject, to be applicable to employees on lines of interstate carriers and on lines over which United States mails are carried; but this bill is in many respects crude and it does not appear that the commission has as yet discussed it. Legal officers of prominent railways have had this matter under consideration for several months, and an unofficial committee of 21 has been investigating the constitutional questions connected with it. A sub-committee of four was appointed to appear before the Federal commission. The committee appears to be

unanimous in doubting the power of Congress to pass a compulsory compensation act. It is recognized, however, that there is need of reform in the present method of disposing of personal injuries sustained by railway employees, and the committee desires to co-operate with the federal commission in promoting such federal legislation as shall be just to both employer and employee.

Safety Appliances.

In the *Daily Railway Age Gazette* of June 21, p. 1605, some remarks by M. K. Barnum, general superintendent of motive power, Illinois Central, were credited to S. M. Hindman, general car inspector, Eastern Pennsylvania division, Pennsylvania Railroad. They were made during the discussion of the M. C. B. report on safety appliances, and should have been given as follows:

Mr. Barnum: At the meeting of the [safety appliance] committee yesterday [June 20], I believe the question of making a drawing [showing the stencil that should be used for cars equipped with the safety appliances] as suggested by Mr. Young was brought up.

Mr. Curtiss: The time was not sufficient. Mr. La Mar tried to make a drawing but he had no tools.

Mr. Barnum: It seems to me very important that this association should officially take up the work done by the conference committee and support any agreement or understanding that this committee had with the Interstate Commerce Commission inspectors, and I think it would be very inconsistent for this association to adopt anything that did not follow these lines; but of course it will be left to the roads to adopt them as they saw fit. It seems to me we ought to carry out the letter and the spirit of the agreement [made by this committee with the Interstate Commerce Commission inspectors] in that conference as far as possible, and then if it is thought best to reduce the lettering, have another conference [with the above inspectors] with that object in view.

Wreck on the Philadelphia & Reading.

One passenger was killed and about 20 others injured in a wreck which occurred at the entrance of the Philadelphia & Reading tunnel at Twenty-first and Hamilton street, Philadelphia, Pa., on Wednesday night. A Chestnut Hill express, running into the Reading terminal in Philadelphia, fouled the tender of a freight locomotive standing on a switch track at the entrance to the tunnel. Newspaper accounts say that the engineman of the express train overran a danger signal. The passenger locomotive struck the tender of the freight engine and was thrown against the north wall of the approach to the tunnel. The first car of the train apparently got past the obstruction, but the second coach was caught by the locomotive and badly wrecked.

Freight Claim Association.

At the twentieth annual meeting of the Freight Claim Association, held at St. Paul, Minn., on June 21, the following officers were elected for the ensuing year: President, W. L. Stanley (S. A. L.); first vice-president, F. E. Shallenberger (Union Line); second vice-president, George W. Perry; secretary and treasurer, Warren P. Taylor (R. F. & P.), Richmond, Va. The next meeting will be held at Buffalo, N. Y.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

Air Brake Association.—F. M. Nellis, 53 State St., Boston, Mass.

American Association of Demurrage Officers.—A. G. Thomason, Scranton, Pa.

American Association of General Passenger and Ticket Agents.—C. M. Burt, Boston, Mass.; next meeting, St. Paul, Minn., Sept. 19, 1911.

American Association of Freight Agents.—R. O. Wells, East St. Louis, Ill.

American Association of Railroad Superintendents.—O. G. Fetter, Carew building, Cincinnati, Ohio; 3d Friday of March and September.

American Electric Railway Association.—H. C. Donecker, 29 W. 39th St., New York; October 9-13, Atlantic City, N. J.

American Railway Association.—W. F. Allen, 24 Park Place, New York.

American Railway Bridge and Building Association.—C. A. Lichty, C. & N. W., Chicago; Oct. 17-19, 1911, St. Louis, Mo.

American Railway Engineering Association.—E. H. Fritch, Monadnock Block, Chicago.

American Railway Industrial Association.—G. L. Stewart, St. L. S. W. Ry., St. Louis, Mo.

American Railway Master Mechanics' Association.—J. W. Taylor, Old Colony building, Chicago.

American Railway Tool Foremen's Association.—O. T. Harroun, Bloomington, Ill.; annual convention, July 11-13, Chicago.

American Society for Testing Materials.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.

American Society of Civil Engineers.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wed., except June and August, New York.

American Society of Engineering Contractors.—D. J. Haner, 13 Park Row, New York; 3d Tuesday of each month, New York.

American Society of Mechanical Engineers.—Calvin W. Rice, 29 W. 39th St., New York.

Association of American Railway Accounting Officers.—C. G. Phillips, 143 Dearborn St., Chicago.

Association of Railway Claim Agents.—J. R. McSherry, C. & E. I., Chicago.

Association of Railway Electrical Engineers.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago.

Association of Railway Telegraph Superintendents.—P. W. Drew, 135 Adams St., Chicago.

Association of Transportation and Car Accounting Officers.—G. P. Conard, 24 Park Pl., New York.

Canadian Railway Club.—James Powell, Grand Trunk Ry., Montreal, Que.; 1st Tuesday in month, except June, July and Aug., Montreal.

Canadian Society of Civil Engineers.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursdays, Montreal.

Car Foremen's Association of Chicago.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.

Central Railway Club.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.

Civil Engineers' Society of St. Paul.—D. F. Jurgensen, 116 Winter St., St. Paul, Minn.; 2d Monday, except June, July and Aug., St. Paul.

Engineers' Society of Pennsylvania.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after 2d Saturday, Harrisburg.

Engineers' Society of Western Pennsylvania.—E. K. Hiles, 803 Fulton building, Pittsburgh, Pa.; 1st and 3d Tuesday. Pittsburgh.

Freight Claim Association.—Warren P. Taylor, Richmond, Va.

General Superintendents' Association of Chicago.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.

International Master Boiler Makers' Association.—Harry D. Vought, 95 Liberty St., New York.

International Railway Congress.—Executive Committee, rue de Louvain, 11 Brussels; 1915, Berlin.

International Railway Fuel Association.—D. B. Sebastian, La Salle St. Station, Chicago.

International Railway General Foremen's Association.—L. H. Bryan, D. & I. R. Ry., Two Harbors, Minn.; July 25-27, Chicago.

International Railroad Master Blacksmiths' Association.—A. L. Woodworth, Lima, Ohio; annual, Aug. 15, Toledo, Ohio.

Iowa Railway Club.—W. B. Harrison, Union Station, Des Moines, Ia.; 2d Friday in month, except July and August, Des Moines.

Master Car Builders' Association.—J. W. Taylor, Old Colony building, Chicago.

Master Car and Locomotive Painters' Association, of United States and Canada.—A. P. Dane, B. & M., Reading, Mass.; Sept. 12-15, 1911, Atlantic City, N. J.

New England Railroad Club.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.

New York Railroad Club.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August, New York.

Northern Railway Club.—C. L. Kennedy, C., M. & St. P., Duluth, Minn.; 4th Saturday, Duluth.

Omaha Railway Club.—H. H. Maulick, Barker Block, Omaha, Neb.; second Wednesday.

Railroad Club of Kansas City.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.

Railway Club of Pittsburgh.—C. W. Alleman, P. & L. E., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.

Railway Signal Association.—C. C. Rosenberg, Bethlehem, Pa.; June 13, New York; annual, Oct. 10, Colorado Springs, Colo.

Railway Storekeepers' Association.—J. P. Murphy, Box C, Collinwood, Ohio.

Richmond Railroad Club.—F. O. Robinson, Richmond, Va.; 2d Monday, except June, July and August.

Roadmasters' and Maintenance of Way Association.—Walter E. Emery, P. & P. U. Ry., Peoria, Ill.; September 12-15, St. Louis, Mo.

St. Louis Railway Club.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.

Society of Railway Financial Officers.—C. Nyquist, La Salle St. Station, Chicago; Sept. 12-14, St. Paul, Minn.

Southern Association of Car Service Officers.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala.

Southern & Southwestern Railway Club.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.

Toledo Transportation Club.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.

Traffic Club of Chicago.—Guy S. McCabe, La Salle Hotel, Chicago; meetings monthly, Chicago.

Traffic Club of New York.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.

Traffic Club of Pittsburgh.—T. J. Walters, Oliver building, Pittsburgh, Pa.; meetings monthly, Pittsburgh.

Train Despatchers' Association of America.—J. F. Mackie, 7042 Stewart Ave., Chicago.

Transportation Club of Buffalo.—J. M. Sells, Buffalo; first Saturday after first Wednesday.

Transportation Club of Detroit.—W. R. Hurley, L. S. & M. S., Detroit, Mich.; meetings monthly.

Traveling Engineers' Association.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y.; annual, August 29-September 1, Chicago.

Western Canada Railway Club.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.

Western Railway Club.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.

Western Society of Engineers.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Wednesday in month except July and August, Chicago.

Wood Preservers' Association.—F. J. Angier, First National Bank bldg., Chicago.

Traffic News.

The Missouri Pacific and the St. Louis, Iron Mountain & Southern have withdrawn from the joint traffic department of the Gould lines which has been maintained at Chicago.

A committee of business men of Knoxville, Tenn., is raising money to establish a traffic bureau, in connection with the board of trade; and the promoters of the enterprise say that success is already assured.

On application of the Denver & Rio Grande, the Colorado railway commission has authorized and ordered reductions ranging from 20 cents to $1.10 per ton in the rates on coal from Crested Butte and Baldwin, and from the Canon City, Walsenburg and Trinidad districts to points in the San Luis valley.

Railways belonging to the Central Passenger Association are preparing to compile data relating to the results of the operation of the 2-cent fare laws in Illinois, Indiana and Ohio, with a view to testing the validity of those laws. Rate clerks representing each of the roads met in Chicago on June 26 to discuss plans for gathering the desired information.

Country rice millers of Louisiana are protesting before the railway commission of that state against the reductions asked for by the big rice milling interests of New Orleans in the rates on rough and clean rice into New Orleans, on the ground that such reductions would bring all of the rough rice into New Orleans and ruin the business of the outside millers.

Beginning on July 2, the "Denver Limited" of the Chicago, Burlington & Quincy, which leaves Chicago at 5 p. m., will have its running time to Denver reduced by 25 minutes. It will reach Denver at 7:30 p. m. of the second day, instead of at 7:55 p. m., as at present. Eastbound from Denver, train No. 6 will leave at 4:15 p. m. instead of at 3:45 p, m., and reach Chicago at 8:45 p. m. of the second day, as at present, making a 30-minute reduction in its schedule.

To compete with the Pacific Navigation Company, which carries passengers between Los Angeles and San Francisco, and which made a special reduction on the occasion of the recent International Sunday School Convention at San Francisco, the Southern Pacific made a round trip rate between the cities named of $10, good for a single day, June 19, but with the privilege of returning any time within fifteen days. It is said that nine train loads of passengers took advantage of this reduction.

The Chicago Great Western does its agricultural missionary work in part by means of little essays printed in its passenger time-tables, thus securing a forced circulation, so to speak. The time-table folder for June, consisting of 54 pages, has two pages devoted to a chapter on the desirability of "spraying around the home," with instructions how to kill bugs and other bad things on trees, plants and vegetables. This little essay is by Prof. G. R. Bliss, of the Iowa State College; and seven other articles are to appear in successive issues of the time-table.

A special committee representing the various passenger and freight associations in Chicago has been appointed to work out a plan by which the headquarters of all these associations can be located in one building instead of in different buildings, as at present, the object being to facilitate the necessary interchange of business between the associations and to lessen the total expense for rent, etc. The following associations are interested in the plan: Central Freight Association, Central Passenger Association, Chicago and Ohio River Committee, Chicago Freight Committee, Illinois Freight Committee, Mississippi Valley Freight Association, Transcontinental Freight Bureau, Transcontinental Passenger Association, Western Classification Committee, Western Passenger Association, Western Railway Inspection Bureau, Western Railway Weighing Association and the Western Trunk Line Committee.

Traffic Clerks' Association of Pittsburgh.

The chief clerks, rate clerks, tariff clerks, traveling freight agents and solicitors of the railways and industrial concerns of Pittsburgh have formed the Traffic Clerks' Association of Pittsburgh, with the object of getting better acquainted with each other. The following officers have been chosen: President, F. M. Garland, Pressed Steel Car Company; secretary, W. P. Keane, Wabash Railroad; treasurer, G. J. Wadlinger, Pittsburgh & Lake Erie.

A Comparison of Foreign and American Railway Figures.

The accompanying table, compiled by the Bureau of Railway Economics, is a comparison from various points of view of the operation and management of the railways in the three most important European countries with that of American railways as a whole, and in Group II. The inclusion of figures for 1900, 1905 and 1909, give a survey of railway development for nearly a decade. In a general way, the more rapid industrial development of the United States is revealed in a greater increase during the decade in traffic and revenues.

A COMPARISON OF AMERICAN WITH ENGLISH, FRENCH, AND GERMAN RAILWAY STATISTICS: 1900, 1905, 1908 AND 1909.*

Subject for Comparison.	1900.	1905.	1908*a*.	1909*a*.
Miles of line operated at end of fiscal year—				
United Kingdom	21,855	22,847	23,205	23,280
France	23,639	24,597	24,931	.....
Prussia-Hesse	19,102	21,629	22,657	23,154
United States, Group II	21,717	23,281	23,697	23,887
United States, All groups	192,556	216,974	230,494	235,402
Percent. of line having two or more tracks—				
United Kingdom	55.6	55.6	55.7	55.8
France	42.3	42.5	43.0	....
Prussia-Hesse	40.5	38.6	41.8	42.3
United States, Group II	27.0	29.4	30.9	31.2
United States, All groups	6.3	7.9	8.8	8.9
Capitalization per mile—				
United Kingdom	$261,863	$271,069	$274,842	$274,766
France *b*	133,583	138,053	141,301	.....
Prussia-Hesse	98,050	100,062	108,293	110,727
United States, Group II	.....	.....	.....	.....
United States, All groups *c*	.....	.....	57,201	59,259
Operating revenues per mile *d*—				
United Kingdom	$22,011	$22,391	$23,184	$23,135
France	12,363	12,364	13,406	.....
Prussia-Hesse	17,440	19,171	20,221	21,056
United States, Group II	16,514	20,752	22,915	22,021
United States, All groups	7,722	9,598	10,491	10,356
Operating expenses per mile *d*—				
United Kingdom	$13,743	$14,157	$15,159	$14,833
France	6,717	6,455	7,765	.....
Prussia-Hesse	10,373	11,622	14,621	14,527
United States, Group II	10,635	13,671	15,972	14,674
United States, All groups	4,993	6,409	7,320	6,851
Net operating revenue per mile *d*—				
United Kingdom	$8,268	$8,234	$8,025	$8,302
France	5,646	5,909	5,641	.....
Prussia-Hesse	7,067	7,549	5,600	6,529
United States, Group II	5,879	7,081	6,943	7,347
United States, All groups	2,729	3,189	3,171	3,505
Ratio of passenger to total revenues—				
United Kingdom ....(percent.)	38.5	38.3	38.5	37.9
France *e* "	34.3	33.0	32.9	....
Prussia-Hesse "	27.6	27.5	28.2	28.6
United States, Group II "	22.0	21.7	22.4	22.2
United States, All groups "	21.8	22.7	23.7	23.3
Locomotives per 1,000 miles of line—				
United Kingdom	970	980	980	980
France	443	452	480	...
Prussia-Hesse	674	711	816 *f*	838 *f*
United States, Group II	449	507	563	561
United States, all groups	195	223	246	243
Cars (all kinds) per 1,000 miles of line—				
United Kingdom	35,740	35,750	36,190	36,060
France	13,347	13,595	14,704	.....
Prussia-Hesse	16,458	16,687	19,332	19,607
United States, Group II	19,077	20,098	23,028	22,388
United States, All groups	7,535	8,494	9,680	9,423
Average capacity of freight car (tons)—				
United Kingdom	....	....	....	....
France	11.2	12.2	13.0	....
Prussia-Hesse	14.1	14.7	15.3	15.5
United States, Group II	....	....	....	....
United States, All groups	....	31.0	35.0	35.0
Average seating capacity of passenger car—				
United Kingdom	....	....	....	....
France	....	....	....	....
Prussia-Hesse	46	48	49	49
United States, Group II *g*	57	59	62	63
United States, All groups	....	....	....	....
Average train miles per mile of line—				
United Kingdom	18,397	17,548	18,237	18,009
France	9,112	8,612	9,317	.....
Prussia-Hesse	10,166	11,724	12,489	12,164
United States, Group II	.....	.....	10,217	9,715
United States, All groups	4,605	4,786	4,899	4,726
Passenger miles per inhabitant—				
United Kingdom	.....	.....	.....	.....
France	224.6	224.3	253.7	.....
Prussia-Hesse	244.8	299.5	339.5	366.7
United States, Group II	272.7	328.5	368.1	347.5
United States, All groups	211.0	283.4	327.6	322.1
Average trips per inhabitant—				
United Kingdom *h*	27.8	27.7	28.7	28.1
France	11.7	11.3	12.2	....
Prussia-Hesse	16.3	20.4	23.7	25.4
United States, Group II	13.2	15.2	16.2	15.5
United States, All groups	7.6	8.8	10.0	9.9

Subject for Comparison.	1910.	1905.	1908a.	1909a.
Average passengers per train—				
United Kingdom	....	....	....	....
France	64	62	65	....
Prussia-Hesse	80 *i*	78 *i*	79	85
United States, Group II *i*	47	55	62	60
United States, All groups *i*	41	48	54	54
Passenger miles per mile of line—				
United Kingdom	.....	.....	.....	.....
France	369,021	357,574	398,984	.....
Prussia-Hesse	.....	.....	627,032	675,023
United States, Group II	202,902	255,718	304,163	290,023
United States, All groups	83,290	109,949	130,073	127,299
Average journey per pass. miles—				
United Kingdom	....	....	....	....
France	19.3	19.8	20.8	....
Prussia-Hesse	15.0	14.6	14.3	14.4
United States, Group II	20.7	21.6	25.0	22.8
United States, All groups	27.8	32.2	32.9	32.8
Ton miles per inhabitant—				
United Kingdom	....	....	....	....
France	292	309	359	....
Prussia-Hesse	486	555	579	606
United States, Group II	2,554	2,826	3,125	2,950
United States, All groups	1,863	2,220	2,460	2,421
Ton miles per mile of line—				
United Kingdom *n*	.....	739,466	808,857	814,713
France	478,891	491,955	565,158	.....
Prussia-Hesse	889,441	988,157	1,028,503	1,069,743
United States, Group II	1,900,578	2,200,372	2,565,154	2,451,841
United States, All groups	735,352	861,396	974,654	953,986
Average tons per train—				
United Kingdom *n*	....	107	116	123
France	144	173	177	233
Prussia-Hesse	163 *i*	159 *i*	210	....
United States, Group II *i*	355	412	464	479
United States, All groups *i*	271	322	352	363
Average haul per ton (miles)—				
United Kingdom *n*	....	22.7	23.2	23.1
France	81.1	79.0	81.0	....
Prussia-Hesse	73.1	69.6	69.5	69.0
United States, Group II	110.9	114.6	130.6	130.3
United States (average railway)	130.9	130.6	143.8	141.9
United States (as a system)	242.7	237.6	253.9	251.1
Total revenue per revenue train mile—				
United Kingdom	$1.20	$1.28	$1.27	$1.28
France	1.35	1.43	1.43	....
Prussia-Hesse	1.60	1.52	1.50	1.61
United States, Group II	....	....	2.24	2.26
United States, All groups	1.66	1.98	2.11	2.17
Receipts per passenger per mile (cents)—				
United Kingdom	....	....	....	....
France	1.16	1.15	1.11	....
Prussia-Hesse	1.01	.95	.90	.94
United States, Group II	1.79	1.72	1.69	1.70
United States, All groups	2.00	1.96	1.94	1.93
Receipts per ton per mile (cents)—				
United Kingdom *n*	....	2.36	2.31	2.30
France	1.32	1.27	1.21	....
Prussia-Hesse *k*	1.24	1.25	1.24	1.24
United States, Group II	.61	.66	.64	.65
United States, All groups	.73	.77	.75	.76

* The 1908 figures in this table differ in some instances from those presented in preceding bulletins. This is due chiefly to adjustments made necessary by the four-year comparison, and partly also to corrections made since the figures were first issued. *a* American figures for 1908 and 1909 do not include returns for switching and terminal companies. *b* "Cost of construction." *c* Net capitalization. *d* The operating revenue, expense, and net revenue items are not strictly comparable as between the different countries, owing to variations in accounting methods. *e* "Grande vitesse" train revenues, which correspond roughly to passenger service train revenue in the United States. *f* Includes an appreciable number of motor wagons (Triebwagen). *g* Pennsylvania Railroad only. *h* Excludes trips on season and periodical tickets. *i* Mixed train miles included in divisor. *k* Excluding receipts from miscellaneous sources (Nebenerträge), for which ton-mileage figures are not given. *n* North Eastern Railway only.

Total Revenues and Expenses.

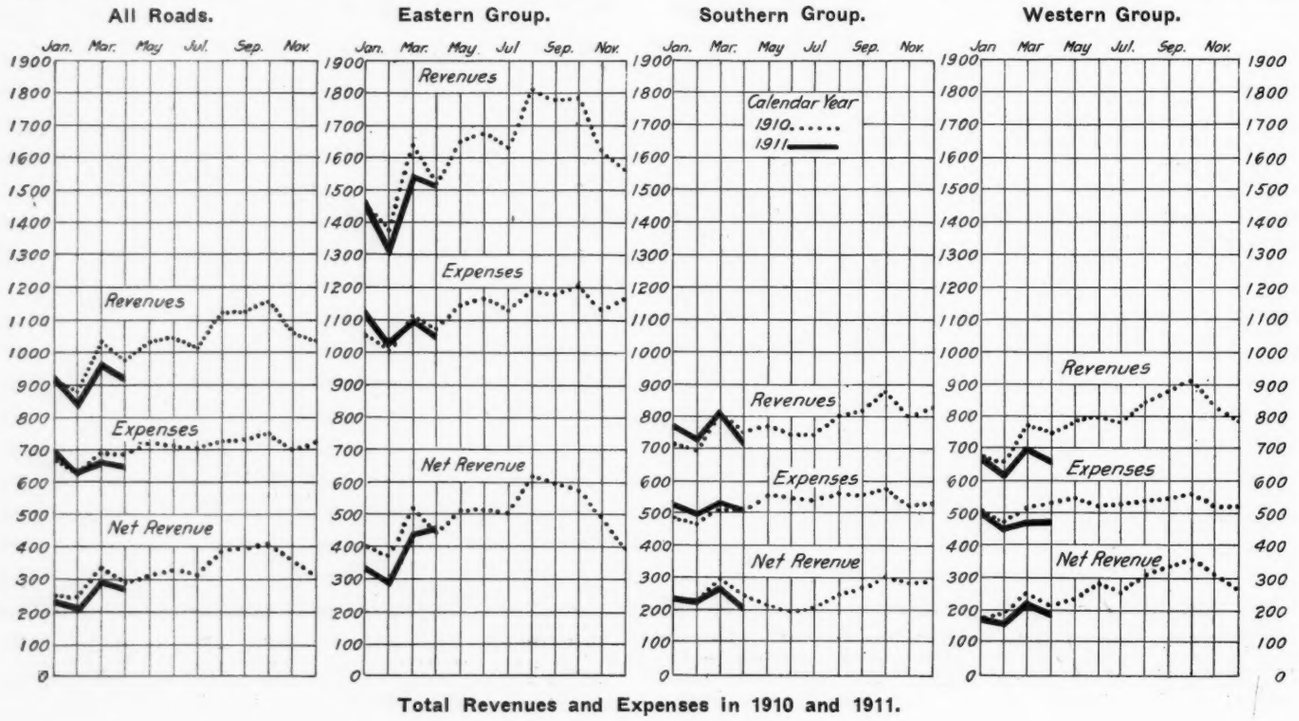
Logan G. McPherson, director of the Bureau of Railway Economics, in presenting the summary of Revenues and Expenses of steam roads in the United States for the month of April, 1911, says:

"For the month of April, 1911, total operating revenues decreased from the same month of 1910 nearly $7,324,000, which was equivalent to $48 per mile or 4.9 per cent. This decrease was practically all in freight revenue.

"Operating expenses also declined as compared with a year ago, the decrease amounting to 4.9 per cent. This is the result of reductions amounting to 15.3 per cent. in maintenance of way, 7.1 per cent. in maintenance of equipment, and 0.4 per cent. in transportation expenses, general expenses increasing 3 per cent. It is significant that this is the first time since this method of reporting monthly revenues and expenses was inaugurated in November, 1910, that there has been any decrease in the transportation account for the United States as a whole. The operating ratio was 70.4 per cent., exactly the same as for April, 1910, as compared with 69.4 per cent. in March, 1911, and 74.7 per cent. in February, 1911. Net operating revenue showed a decrease of $14 per mile or 4.7 per cent. Net revenue per mile per day was $9.16 as compared with $9.55 in March. There was an increase in taxes of 1.4 per cent., and operating income, which is net revenue with outside operations included and taxes deducted, showed a decline of $14 per mile, or 5.6 per cent.

"Every group shows a decline in total operating revenues, the South for the first time since this method of tabulation was begun in November, 1910. The heaviest decline was in the western group, amounting to 10.2 per cent. In the East there was a decline of only 0.1 per cent., and in both East and South passenger revenue increased.

"In operating expenses the East shows a decline of 1.7 per cent., heavy reductions in maintenance expenses being largely offset by increases in the other accounts. In the South the increase in transportation expense of 7.3 per cent. overcame reductions in other accounts and resulted in an increase in total



Total Revenues and Expenses in 1910 and 1911.

operating expense of 1.8 per cent. In the West, there was a decrease in operating expenses of near 10 per cent., the reduction amounting to nearly 23 per cent. in maintenance of way.

"The operating ratio shows a considerable increase in the southern group, rising from 67.3 per cent. in April, 1910, to 70.2 per cent. in April, 1911. The changes in the other groups are slight, the East showing a decrease and the West an increase. For the first time since these tabulations were inaugurated, the East shows a gain in net revenue, amounting to 3.7 per cent. The other two groups show declines of 11 per cent. The same relative results are found in the case of operating income, the increase in the East being 3.8 per cent., and the decreases in the South and West being respectively 14.5 and 12.3 per cent.

"For the ten months of the fiscal year 1911, there is a slight increase of operating revenues for all roads of three-tenths of 1 per cent. over the corresponding period of 1910. However, expenses increased 4.4 per cent., with the result that net revenue shows a decrease of 7.6 per cent. This decrease runs as high as 11.8 per cent. in the eatsern group, and was 4.6 per cent. in the West, and 1.0 per cent. in the South. In operating income corresponding results are found.

"The calendar year to date makes an unfavorable showing as compared with last year, because with a decrease in operating revenues there is not a correspondingly large decrease in operating expenses. Operating revenues for these four months for all roads declined 3.6 per cent., all the decrease being in freight revenue. Expenses decreased 1.1 per cent., with the result that net revenue shows a decrease of 9.6 per cent. and operating income of 11.5 per cent. As has been the case during the ten months of the fiscal year, the heaviest decline in operating income is found in the eastern group, but a decrease appears in every group."

The accompanying chart shows the variation in revenues and expenses in the separate months.

RATIO OF EXPENSES TO TOTAL OPERATING REVENUE.

	April, 1911.	April, 1910.	Fiscal year ended June 30, 1910.
Percentage of total operating revenue—			
Maintenance of way and structures..	13.3	14.9	13.4
Maintenance of equipment.....	15.5	15.8	15.0
Traffic	2.2	2.1	2.0
Transportation	36.7	35.1	33.4
General expenses	2.7	2.5	2.5
Total operating expenses	70.4	70.4	66.3

INTERSTATE COMMERCE COMMISSION.

The Interstate Commerce Commission has suspended until December 24, increased freight tariffs filed by the railways between the Mississippi and the Missouri rivers. The proposed new rates apply to all of the first four classes of freight and the increase is estimated to average about 8 per cent. over those of the existing tariffs.

"The Interstate Commerce Commission announces that unanimous agreement has been reached in the selection of a secretary for the commission. The one agreed on has business matters of his own which he is obliged to conclude, and which will prevent him from assuming duties for a few weeks. For reasons involving his personal and business affairs the name of the one selected will not be announced until he is ready to assume the duties of the office." *The Journal of Commerce* Washington correspondent says that indications are that the man referred to is John Marble, who has in the past acted as attorney for the commission, and who is now employed by the Lorimer investigating committee.

Reparation Awarded.

Northern Wisconsin Produce Co. v. Minneapolis, St. Paul & Sault Ste. Marie. Opinion by the commission.

Demurrage was improperly assessed on a car which the complainant was ready to take delivery on. (21 I. C. C., 197.)

Ontario Iron Ore Co. v. New York Central & Hudson River et al. Opinion by Commissioner Prouty.

The present rate of $1.90 per gross ton for carload lots of iron ore from Lakeside, N. Y., to Earlston, Pa., is unreasonable. The reasonable rate is fixed at $1.60 per ton. (21 I. C. C., 204.)

Willamette Pulp & Paper Co. v. Boston & Albany et al. Opinion by the commission.

The rate of $2.60 per hundred pounds on rubber covered iron paper mill rolls in L.C.L. shipments from Boston, Mass., to Portland, Ore., is unreasonable, and $1.75 is found to be a reasonable rate. (21 I. C. C., 178.)

Murphy Brothers v. New York Central & Hudson River. Koolyrite Trucking Co. v. Pennsylvania Railroad et al. Opinion by the commission.

The assessment at New York of track storage charges for the same time during which demurrage charges were waived on account of weather interference is unreasonable. (21 I. C. C., 176.)

Minneapolis Threshing Machine Co. v. Chicago, Milwaukee & St. Paul et al. Opinion by Chairman Clements.

The complainant ordered one 50-ft. flat car and the defendant being unable to furnish this size of car forwarded the shipment on two shorter flat cars. In this case the charges should have been assessed on a basis of the rate and minimum applicable to the car ordered. (21 I. C. C., 181.)

American Hay Co. v. Lehigh Valley. Opinion by Chairman Clements.

Defendant charges $2.00 per car for switching and reconsigning at the hay shed of the complainant. The only discrimination shown by the evidence has already been corrected, and the complainant and defendant are ordered to file a statement covering the period when there was discrimination, and on this statement the order for reparation will be based. (21 I. C. C., 166.)

Rates on Malt Reduced.

Texas Brewing Co. v. Atchison, Topeka & Santa Fe et al. Opinion by the commission.

The defendant's rate of 48 cents per hundred pounds on malt in carloads from Chicago and Milwaukee, and 53 cents from Minneapolis, Minn., to Fort Worth, Tex., found unreasonable, and rates of 34½ cents from Chicago, 35½ cents from Milwaukee, and 38 cents from Minneapolis are prescribed. (21 I. C. C., 171.)

Switch Connection Ordered.

Ridgewood Coal Co. v. Lehigh Valley. Opinion by Chairman Clements.

A switch connection with the complainant's coal mine near Wilkesbarre, Pa., asked for by the complainant, can be put in safely, and the commission orders it under Section 1 of the Act to Regulate Commerce. (21 I. C. C., 183.)

Discrimination in Favor of Nashville.

W. S. Duncan & Co. et al. v. Nashville, Chattanooga & St. Louis et al. Opinion by Chairman Clements.

The granting at Nashville, Tenn., of a reconsigning privilege which does not exist anywhere south of the Ohio river and east of the Mississippi river, constitutes a discrimination against other places in favor of Nashville. (21 I. C. C., 186.)

After a Year's Investigation Advanced Rates on Live Stock Permitted.

In re Advance of Rates on Live Stock from Kansas City, Mo., to St. Louis, Mo., and other Mississippi river Crossings. Opinion by Chairman Clements.

The principal carriers operating between the Missouri and Mississippi rivers filed with the commission tariffs which were to become effective August 15, 1910, and on dates subsequent thereto, containing new rates and charges on live stock from Kansas City and points in what is known as Kansas territory to St. Louis and East St. Louis and other Mississippi river crossings. These tariffs are now suspended until June 10, 1911, pending investigation under the provisions of section 15 of the statute as amended June 18, 1910. In so far as the proceeding involves the allegations of unjust discrimination as between the live-stock markets at Kansas City, Omaha, and Chicago, as the commission has before it only the rate from one of these markets, namely, Kansas City, it is manifestly impossible on the issue presented, to come to any conclusion. That in so far as

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF APRIL, 1911. (SEE ALSO ISSUES JUNE 9 AND 16.)

Name of road.	Mileage operated at end of period.	Operating revenues			Operating expenses						Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or dec.) comp. with last year.
		Freight.	Passenger.	Total, inc. misc.	Maintenance: Way and structures.	Maintenance: Of equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	143	$78,784	$33,838	$121,771	$22,130	$21,299	$3,393	$50,053	$5,440	$102,315	$19,456	$211	$4,680	$14,987	—$18,141
Ann Arbor	301	103,761	34,353	146,891	30,086	20,884	4,011	54,422	6,513	115,916	30,975	—1,729	14,265	14,981	—10,121
Arizona Eastern	364[1]	86,962	34,016	127,873	43,855	9,299	1,788	38,062	4,833	97,837	30,036	35	5,212	24,859	—63,840
Atlantic City	167	60,823	66,482	137,681	42,712	18,341	2,236	65,602	1,613	130,504	7,177	—3,223	7,000	—3,046	26,019
Buffalo & Susquehanna *R. R.*	265	128,552	8,477	141,511	23,387	24,590	1,866	56,333	6,890	113,066	28,445	.....	2,600	25,845	—
Buffalo & Susquehanna *Ry.*	91	32,284	7,784	42,014	5,186	26,316	448	21,953	1,710	55,613	—13,599	—6	1,400	—15,005	--
Carolina, Clinchfield & Ohio	236	123,156	10,888	136,852	13,182	20,205	6,278	32,305	8,038	80,008	56,844	.....	5,500	51,344	28,314
Carolina, Clinchfield & Ohio of S. C.	18	9,585	1,335	11,092	595	139	1,005	2,549	492	4,780	6,312	.....	200	6,112	—
Charleston & Western Carolina	340	129,254	25,533	162,116	27,016	15,734	3,350	68,447	4,381	118,928	43,188	.....	4,475	38,713	8,488
Chicago, Peoria & St. Louis	255	90,938	20,675	118,455	17,816	27,303	7,408	59,805	5,529	117,861	594	.....	3,500	—2,906	—13,201
Colorado Midland	337	95,989	18,885	121,665	25,546	31,038	6,523	62,846	5,431	131,384	—9,718	—1,219	8,500	—19,437	—29,681
Detroit, Grand Haven & Milwaukee	190	107,210	35,517	165,199	16,927	29,646	6,154	89,725	4,291	146,743	18,456	—74	3,009	15,373	—19,794
Detroit, Toledo & Ironton	441	102,664	10,403	127,251	33,545	5,852	2,346	65,903	5,323	112,969	14,282	—136	6,712	7,434	13,039
Evansville & Terre Haute	310	115,989	52,332	190,390	27,631	26,455	5,678	66,947	6,941	133,652	56,738	—481	11,295	44,962	—6,830
Georgia Southern & Florida	395	101,203	58,538	189,077	20,503	33,680	5,987	74,233	8,859	143,262	45,815	.....	9,618	36,197	28,058
Grand Trunk Western	347[2]	375,162	131,131	536,606	69,902	85,015	17,230	245,171	12,010	429,328	107,278	—1,327	31,697	74,254	—8,233
Gulf & Ship Island	307	118,686	28,043	160,153	22,160	30,580	1,641	49,861	7,933	112,175	47,978	.....	5,050	42,928	—26,476
International & Great Northern	1,159	474,033	155,970	678,054	121,094	126,702	18,970	324,011	23,096	613,873	64,181	—539	20,000	43,642	5,075
Louisiana & Arkansas	255	92,571	16,126	113,248	20,549	19,132	2,408	32,246	4,438	78,773	34,475	.....	3,240	31,235	—25,308
Louisiana Ry. & Nav. Co	350	101,638	19,946	130,677	15,677	15,013	5,318	54,446	6,069	96,523	34,154	.....	4,400	29,754	2,261
Louisiana Western	207[3]	104,837	58,462	171,757	20,398	25,104	7,221	49,721	7,660	110,104	61,653	291	5,876	56,068	30,408
Midland Valley	324	76,717	36,585	118,791	23,590	16,084	2,968	40,748	6,169	89,559	29,232	14,928	5,475	38,685	—12,162
Missouri Pacific	3,921[4]	1,343,301	340,841	1,883,569	280,036	318,707	56,376	1,071,722	66,322	1,793,163	90,406	—2,089	76,500	11,817	—262,945
New Orleans Great Northern	282	101,199	28,563	139,240	20,141	18,977	2,481	43,089	6,621	91,309	47,931	—38	2,000	45,893	—23,915
New Orleans, Mobile & Chicago	404	106,465	26,066	142,041	18,200	14,651	3,135	47,584	8,173	91,743	50,298	.....	4,773	45,525	—5,505
Northwestern Pacific	376	89,861	143,973	253,535	46,864	46,810	2,910	98,076	9,362	204,022	49,513	.....	12,700	36,813	—10,168
Oregon-Washington R. R. & Nav. Co	1,737	875,839	396,422	1,361,483	155,037	108,602	42,175	487,371	40,022	833,207	528,276	—4,699	54,579	468,998	—
Pecos & Northern Texas	296[5]	103,245	22,420	131,772	17,687	34,170	1,318	48,306	4,894	106,375	25,397	.....	3,197	22,200	5,649
St. Joseph & Grand Island	319	85,547	33,037	129,980	31,343	21,070	5,998	57,507	6,523	122,441	7,539	140	5,711	1,968	55,260
St. Louis, Iron Mtn. & Southern	3,313[6]	1,482,185	477,469	2,148,070	247,534	309,839	49,941	849,334	74,265	1,530,913	617,157	—3,333	84,655	529,169	—4,571
Santa Fe, Prescott & Phoenix	364[7]	91,806	35,595	135,627	24,747	12,419	2,251	37,272	5,656	82,345	53,282	.....	103	53,178	—11,013
Southern Kansas Ry. of Texas	125	136,717	14,267	155,571	11,500	32,475	1,207	49,859	4,100	99,141	56,430	.....	1,980	54,450	5,016
Tennessee Central	294	86,488	29,449	123,154	17,109	13,696	4,707	38,106	9,568	83,186	39,968	.....	3,980	35,988	6,501
Trinity & Brazos Valley	463	92,967	25,540	124,057	28,989	16,367	7,994	66,600	9,652	129,602	—5,545	.....	3,500	—9,045	14,027
Western Maryland	543	504,545	63,644	589,789	63,046	71,811	7,768	189,339	13,997	345,961	243,828	—160	21,000	222,668	—65,649
Yazoo & Mississippi Valley	1,372	521,725	200,192	773,486	128,498	111,114	15,064	296,499	24,184	575,359	198,127	179	36,053	162,244	73,687
TEN MONTHS OF FISCAL YEAR, 1911.															
Alabama & Vicksburg	143	$966,337	$412,690	$1,490,685	$207,803	$247,245	$37,366	$509,299	$54,444	$1,056,157	$434,528	$622	$46,787	$388,363	—$19,642
Ann Arbor	301	1,111,227	400,121	1,617,961	207,275	203,405	39,690	558,324	71,569	1,080,263	537,698	—3,286	140,261	394,150	40,749
Arizona Eastern	364[1]	940,371	331,994	1,359,872	328,836	120,035	19,079	380,390	39,334	887,674	472,198	—20	61,031	411,147	—164,860
Atlantic City	167	615,596	939,661	1,638,766	272,209	147,884	27,694	816,951	13,281	1,278,019	360,747	—49,500	70,000	241,247	52,349
Buffalo & Susquehanna *R. R.*	265	1,251,503	81,938	1,388,788	263,003	269,344	17,204	513,792	55,727	1,119,070	269,708	.....	24,071	245,637	—
Buffalo & Susquehanna *Ry.*	91	448,738	93,745	566,828	67,058	284,597	7,109	243,202	27,680	629,647	—62,819	24	15,929	—78,724	—
Carolina, Clinchfield & Ohio	236	1,221,716	130,196	1,388,262	131,862	192,651	56,365	306,679	82,837	770,394	617,868	1,983	55,000	564,851	294,453
Carolina, Clinchfield & Ohio of S. C.	18	71,645	14,723	88,733	6,083	803	9,332	23,121	5,310	44,649	44,084	.....	2,000	42,084	—
Charleston & Western Carolina	340	1,269,181	300,836	1,642,806	287,337	186,795	31,367	561,580	39,149	1,106,228	635,578	.....	44,750	491,828	136,960
Chicago, Peoria & St. Louis	255	1,143,256	256,240	1,471,108	216,226	315,804	72,760	671,933	58,530	1,335,253	135,855	.....	44,000	91,855	—125,680
Colorado Midland	337	1,173,071	273,305	1,621,706	223,504	356,838	51,649	727,813	55,821	1,415,625	206,081	—6,224	83,382	116,475	—144,224
Detroit, Grand Haven & Milwaukee	190	1,009,294	454,690	1,696,722	224,590	233,054	64,082	868,204	45,352	1,435,282	261,440	—414	30,090	230,936	—207,645
Detroit, Toledo & Ironton	441	1,277,738	136,802	1,546,800	323,030	211,396	27,299	820,647	56,426	1,438,798	108,002	—209	67,120	40,673	24,155
Evansville & Terre Haute	310	1,411,857	604,070	2,231,677	277,040	299,339	55,306	729,458	65,284	1,426,427	805,250	—7,384	96,598	701,268	12,355
Georgia Southern & Florida	395	1,105,753	664,113	2,036,990	218,713	404,918	60,252	765,373	89,572	1,538,828	498,162	.....	94,093	404,069	25,354
Grand Trunk Western	347[2]	3,324,044	1,558,511	5,217,774	532,397	776,548	181,122	2,270,510	128,845	3,889,422	1,328,352	—12,500	316,973	998,879	—285,402
Gulf & Ship Island	307	1,227,086	339,676	1,685,010	210,977	296,993	16,144	486,189	79,598	1,089,901	595,109	.....	49,974	545,135	24,334
International & Great Northern	1,159	5,540,291	1,788,506	7,821,795	1,165,178	1,170,574	195,854	3,286,210	221,024	6,038,840	1,782,955	—3,563	214,000	1,565,392	392,903
Louisiana & Arkansas	255	1,003,564	159,505	1,209,130	194,027	169,942	24,200	324,611	44,915	757,695	451,485	.....	27,466	424,019	24,000
Louisiana Ry. & Nav. Co	350	1,090,659	200,912	1,409,189	232,887	172,105	49,593	578,793	61,088	1,094,466	314,723	.....	44,000	270,723	75,767
Louisiana Western	207[3]	1,118,487	564,298	1,765,392	222,793	248,379	64,417	521,145	75,506	1,132,240	633,152	1,091	68,980	565,263	12,530
Midland Valley	324	715,786	345,285	1,124,303	206,700	170,872	22,813	333,641	69,942	803,968	320,335	26,416	54,755	291,996	—34,644
Missouri Pacific	3,921[4]	14,484,814	3,923,025	20,536,708	3,201,104	3,271,346	587,043	9,758,935	699,317	17,517,745	3,018,963	—27,193	828,000	2,163,770	—
New Orleans Great Northern	282	987,071	308,000	1,409,306	208,934	194,365	30,134	407,568	53,819	894,820	514,486	—862	19,511	494,113	39,650
New Orleans, Mobile & Chicago	404	1,160,162	283,847	1,542,640	211,650	126,546	28,594	461,902	82,300	910,992	631,648	.....	43,783	587,865	94,244
Northwestern Pacific	376	1,142,703	1,390,815	2,745,660	498,329	420,452	28,869	1,041,672	92,676	2,081,998	663,662	.....	110,000	553,662	—76,102
Oregon-Washington R. R. & Nav. Co	1,737	3,356,942	1,495,140	5,187,690	642,374	533,106	184,124	2,076,932	184,966	3,621,501	1,566,189	—36,291	295,399	1,234,499	—
Pecos & Northern Texas	296[5]	1,018,974	259,662	1,338,801	187,703	266,162	20,964	455,917	46,216	976,962	361,839	.....	32,350	329,489	—101,433
St. Joseph & Grand Island	319	933,675	381,145	1,432,049	300,847	205,166	64,413	621,217	63,183	1,254,826	177,223	489	59,036	118,676	79,898
St. Louis, Iron Mtn. & Southern	3,313[6]	16,744,924	5,126,229	23,764,929	3,317,965	3,116,231	549,501	8,211,665	761,819	15,957,181	7,807,748	—36,404	792,939	6,978,405	2,655
Santa Fe, Prescott & Phoenix	364[7]	949,373	361,071	1,402,734	247,628	131,413	27,614	428,580	56,774	892,009	510,725	.....	1,050	509,675	—42,408
Southern Kansas Ry. of Texas	125	1,028,229	167,762	1,242,928	146,220	287,033	19,888	421,626	42,055	916,822	326,106	.....	16,879	309,227	—112,417
Tennessee Central	294	857,233	325,205	1,253,867	178,541	132,348	48,705	389,813	82,528	831,935	421,932	.....	39,801	382,131	47,339
Trinity & Brazos Valley	463	1,362,354	313,969	1,744,285	322,740	282,466	80,971	801,315	110,103	1,597,595	146,690	.....	36,185	110,505	18,890
Western Maryland	543	4,928,893	808,720	5,986,636	668,878	716,345	89,590	2,063,730	133,937	3,672,480	2,314,156	—2,973	198,000	2,113,183	—
Yazoo & Mississippi Valley	1,372	6,354,992	2,339,780	9,268,751	1,623,023	1,298,778	149,723	2,926,925	237,284	6,235,733	3,033,018	—3,275	342,151	2,687,592	1,026,487

Mileage operated on April 30, 1910.—[1] 308 miles; [2] 336 miles; [3] 198 miles; [4] 3,883 miles; [5] 198 miles; [6] 3,287 miles; [7] 257 miles. — Indicates Deficits, Losses and Decreases.

the question of the reasonableness of the rates in and of themselves is concerned, that matter directly involves the larger question of the reasonableness of the thorough transportation charges from points west of Kansas City to the consuming centers of the east, and as there are not before the commission the proper parties or the necessary information, no conclusion can be reached on that issue in this proceeding.

For these reasons, the suspension of the rates involved will not be further continued, and the order suspending them is canceled without prejudice to any of the interests involved. (21 I. C. C., 119.)

Rate on Plate Glass Reduced.

Memphis Freight Bureau et al., v. St. Louis & San Francisco et al. Opinion by Commissioner McChord.

This complaint is brought on behalf of two corporations which manufacture mirrors and art glass at Memphis, Tenn., and distribute plate and window glass, rough-ribbed glass, and kindred lines, which was shipped to them from factories at St. Louis, Mo., Valley Park, and Crystal City. The third class rate of 45 cents per 100 lbs. applicable to plate glass in carloads from St. Louis, Mo., to Memphis, Tenn., is found to be unreasonable so far as it exceeds the fourth class rate of 35 cents per 100 lbs., and that the carload rate of 30 cents per 100 lbs. on rough-ribbed glass exceeding one foot square from the same points of origin to Memphis is not shown to be unreasonable. (21 I. C. C., 113.)

Rate on Tin-Plate Scrap Reduced.

Vulcan De-Tinning Co. v. Union Pacific et al. Opinion by the commission:

This complaint was on a shipment of one car of scrap metal sent from Denver, Colo., to Streator, Ill., over the Union Pacific and the Chicago & Alton. The goods were described as scrap tin, but the description should have been scrap tin plate, tin plate being made mostly of iron of very low value. Soon after the shipment was made (at 52½ cents per 100 lbs.), a commodity rate was made of 31¾ cents, but with a higher carload minimum. The commission orders reparation, with interest, declaring that the rate should not be over 31¾ cents, but as this latter rate has been in effect since September, 1909, no order for the future is issued. (21 I. C. C. 93.)

Decision on Transshipment.

In re Transshipment Rates on the Chesapeake & Ohio. Opinion by Commissioner Meyer:

The Interstate Commerce Commission has issued an important decision regarding the operations over the Chesapeake & Ohio and other railways involving the question of "transshipment" rates in connection with water carriers. The decision reverses all previous decisions on this subject, and it is believed that its effect will be felt by the United States Steel Corporation, which transports its ore wholly in the state of Michigan by rail and there transships it by lake carriers, and that other large shippers so situated will be similarly affected.

The commission holds that there is no arrangement for continuous carriage or shipment from one state to another between a carrier by railway and a carrier by water not subject to the act; when shipments by railway, entirely within one state, are consigned in care of a carrier by water which acts as an agent of the consignee at a port in that state and the carrier by water transports said consignments to a point in another state, such ultimate destination not appearing in the rail carrier's bill of lading.

The inquiry in the present instance was instituted by the commission on its own motion into transshipment rates on lime from Eagle Mountain, Va., consigned to "J. B. Flora & Co., care of Elizabeth & Norfolk Steamship Company, Norfolk, Va.," the water carrier taking charge at Norfolk.

Commissioner Lane, concurring:

I concur fully in the substance of the above opinion and in the result reached. I desire to point out, however, that the decision is, in principle, in direct conflict with the view heretofore taken by the commisison after consideration of similar transactions at other ports on the Atlantic ocean and also at ports upon the lakes. There are now on file with this commission a large number of rates described as "transshipment rates." These rates apply from interior points to various ports. They are in each instance less in amount than the local rates from such interior points to such ports, and in substance are identical with the interstate rate of $1.50 mentioned above. It is well known to the commission that such transshipment rates are applied to the rail transportation of commodities which are afterwards transported from such ports by water carriers not operating subject to the act to regulate commerce, and the commission has recognized this as proper. The contracts of transportation under these rates call for delivery at the port, and no carrier beyond is party thereto. Such contracts, by all the tests of the authorities relied upon in the opinion herein, do not give basis for the application of any rate except the open local rate to the port. The fact that after the conclusion of the transportation under such contract a new and further transportation is given to the commodity cannot in law operate as the basis for a distinction in the rail rates from point of origin to the port. This is fully recognized by the commission in its opinion. The parties concerned with the transportation to and from Norfolk, Va., described in the report, are held to compliance with the law as expressed by the Supreme Court in the cases cited. Therefore I am unable to understand how grain moving, for instance, from St. Paul to Gladstone, Mich., for reshipment, under contracts identical in substance with these here considered, may legally be granted a rate less than the local rate to Gladstone because it is afterwards carried from Gladstone to Buffalo under a new contract of transportation by a water carrier not subject to the act, so long as the doctrine of the opinion herein is recognized by the commission. (21 I. C. C. 207.)

Use of Alternative Rates Permissive, Not Compulsory.

Goodman Manufacturing Company v. Pittsburg, Cincinnati, Chicago & St. Louis. Opinion by the commission:

A commodity rate at a prescribed minimum can not be held to be unreasonable solely on the ground that a higher class rate applied to a lower carload minimum would, within certain limits, produce a lower charge. The rule for the alternative application of class or commodity rates when both are published in one and the same tariff is permissive and not compulsory. The fact that the two rates so published take different minima does not modify the rule. Complainant shipped two carloads of machinery from Chicago to Collinsville, Ill. Class rates from Chicago to Collinsville are subject to the Illinois classification, which provides for the application of sixth class rate on machinery in carloads, minimum 24,000 lbs. Subject to this minimum the tariffs of defendant carriers named a sixth class rate of 16.6 cents per 100 lbs. In another tariff publishing commodity rates only, the defendants had established and still maintain a specific commodity rate of 15.5 cents on machinery in carloads, but subject to a minimum weight of 30,000 lbs. The latter rate and minimum were applied to the shipments, each of which weighed 26,000 lbs.

No evidence was adduced by complainant tending to prove the commodity rate and higher minimum to be unreasonable. As a matter of fact, the complainant at the hearing shifted its ground of attack and rested its case upon the claim that the defendants should have provided for the alternative use of the two rates with their different minima so that the shipper might have been charger whichever rate, as its corresponding minimum, would have made the lower charge.

Carriers may, if they choose, publish both class and commodity rates in the same tariff and, under Rule 7-*b* of Tariff Circular 18-A, subject to certain conditions specifically set forth in the rule, they may provide for the alternative use of such rates by including in different sections of one and the same tariff such class and commodity rates. The fact that the two rates so published take different minima does not modify this rule.

The rule referred to was adopted by the commission at the request of many shippers and carriers, and it frequently contributes to simplicity and clearness in tariff construction. Its use is permissive. No requirement is upon the carriers to so construct their tariffs, and the failure to do so in this case raises no presumption that the charge assessed under the commodity rate and minimum was unreasonable, because in excess of the charge which would have accrued under the class rate applied to the minimum weight prescribed by the Illinois classification. It not appearing that the rate charged was unreasonable an order will be entered dismissing the complaint. (21 I. C. C. 95.)

COURT NEWS.

In the federal court at Toledo, Ohio, June 23, the Erie Railroad was fined $200 for two violations of the Safety Appliance Law.

The Carrier Low Company, manufacturer of paper board boxes at Joliet, Ill., was fined $2,000 in the United States district court at Chicago on June 21, for misbilling shipments over the Elgin, Joliet & Eastern. It billed strawboard boxes as strawboard in an effort to obtain a lower than the proper rate.

The Kentucky court of appeals, reversing the decision of the circuit court, has held that the ownership of the Frankfort & Cincinnati by the Louisville & Nashville is unlawful. The constitution of Kentucky provides that one road cannot own another parallel or competing road, and the court finds that this provision is violated in the case of the L. & N. and the Frankfort & Cincinnati.

Union Pacific-Southern Pacific Merger Upheld.

The Union Pacific's ownership of Southern Pacific stock has been adjudged not a violation of the Sherman law in the decision of the U. S. Circuit Court, Eighth district.

Judge Adams delivered the majority opinion, dismissing the suit. Judge Hook dissented.

Empowered by the Hepburn Act of 1906, in January, 1907, the Interstate Commerce Commission began investigation of the relations among the western railways. On the evidence secured, the government, on February 1, 1908, filed a suit in equity in the United States Circuit Court, Eighth district, against Union Pacific and auxiliaries, Southern Pacific, Northern Pacific, Great Northern, Atchison, San Pedro, Los Angeles & Salt Lake, Farmers' Loan & Trust Company, E. H. Harriman, Jacob H. Schiff, Otto Kahn, James Stillman, Henry H. Rogers, Henry C. Frick and William A. Clark.

The basic allegation was that the individuals named conspired to effect a virtual consolidation of the Union Pacific and other transcontinental lines intending unlawfully to restrain transcontinental commerce. The court was asked to adjudge this conspiracy a violation of the Sherman law, and to perpetually enjoin Union Pacific, and its auxiliaries from purchasing, acquiring, receiving, holding, voting, or in any manner acting as owner of any shares of the Southern Pacific, Northern Pacific, Great Northern, Atchison, or Salt Lake line.

At the present time the Harriman lines own no Hill or Atchison stocks. Answering the government's contention that Union Pacific interests blocked construction of an independent line between Los Angeles and Salt Lake, the defendants testified that their blocking tactics were confined to defense of their own right of way which the Clark interests attempted to use without compensation, and that half of the Salt Lake line had been completed by the Harriman roads before the Clark scheme was hatched.

The remaining and cardinal point was the government's contention that under independent control 10 per cent. of the total Union and Southern Pacific traffic would be competitive.

This 10 per cent. includes California traffic. The defendants argued that Union Pacific was not a competitor for California traffic; that it had no control over such traffic by reason of its line to Portland and boats to San Francisco; that this route consumed several days more time, and could not operate at lower rates without prompting Southern Pacific to retaliate by turning a richer eastbound business over to the Rio Grande at Ogden; that for this reason the Southern Pacific absolutely controlled California traffic before the merger; that purchase of a substantial holding of Southern Pacific stock by Union Pacific amounted, therefore, to mere advancement of Southern Pacific's gateway from Ogden to Omaha, and in no wise altered competitive conditions.

Eliminating California traffic the maximum proportion of the Harriman lines' total business which could possibly be considered competitive was placed by the government's exhibits at less than 3 per cent.

The personnel of the court which heard the merger case is as follows: Judge Walter H. Sanborn, of St. Paul; Justice Willis Van Devanter, Washington, D. C.; Judge William C. Hook, of Leavenworth, Kan., and Judge Elmer B. Adams, of St. Louis.

Railway Officers.

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

G. S. Hobbs, second vice-president and comptroller of the Maine Central, has had his jurisdiction extended over the Portland Terminal Co., and A. B. Ireland has been appointed claim agent, both with offices at Portland, Me.

John M. Whitman, vice-president in charge of construction of the Chicago & North Western, at Chicago, has retired, and E. C. Carter, chief engineer, will hereafter report to the president. Mr. Whitman was born in 1837 at Elbridge, Onondaga county, N. Y., and his first railway work was in 1856 in the engineering department of the Illinois Central. But he remained there only a short time, and from 1858 to 1860 he was a leveler on enlargement work on the Erie canal. Next he became engineer in charge of construction for the Brunswick & Albany, now a part of the Atlantic Coast Line. He was then for one year engineer in charge of construction of the Union Stock Yards, at Chicago, and from 1867 to 1869 was engineer engaged in deepening the Illinois & Michigan canal. In 1869 he became engineer in charge of construction of the Iowa Midland, now a part of the Chicago & North Western, and from 1872 to 1876 was engineer and superintendent of the Chicago & Pacific, now a part of the Chicago, Milwaukee & St. Paul. In the latter year he was appointed receiver and superintendent of that road. In June, 1880, he was appointed superintendent of the Iowa division of the Chicago & North Western, and has been with the North Western system ever since. In February, 1883, he was appointed general superintendent of the Chicago, St. Paul, Minneapolis & Omaha, and in August, 1887, general manager of the Chicago & North Western. He became fourth vice-president in November, 1899, and in January, 1906, he was made vice-president in charge of construction.

Operating Officers.

George Curran has been appointed assistant superintendent of District No. 3 of the Canadian Pacific, at Montreal, Que.

H. R. Hanlin, general superintendent of the Tonopah & Goldfield, with office at Goldfield, Nev., has resigned, and his former position has been abolished.

George H. Bennett has been appointed general superintendent of the Paris & Great Northern, with office at Paris, Tex., succeeding W. H. Upton, resigned.

L. E. McCabe, assistant superintendent of the Illinois Central, at Princeton, Ky., has been appointed superintendent of the Indiana division, with office at Mattoon, Ill., succeeding P. Laden, resigned to go to the Missouri, Oklahoma & Gulf.

H. C. Manchester, superintendent of transportation; V. H. Vaughan, superintendent, and W. B. Drew, superintendent of car service, of the Maine Central, have had their jurisdiction extended over the Portland Terminal Co., all with offices at Portland, Me.

John C. Muir, superintendent of the Chicago & Eastern Illinois at Danville, Ill., has been appointed general superintendent of that road, in addition to his duties as general superintendent of the Evansville & Terre Haute, with office at Danville, the office of general superintendent of the latter road having been transferred from Evansville, Ind. G. H. Trenary, superintendent of the Illinois division of the Chicago & Eastern Illinois at Salem, Ill., has been transferred to the Chicago division, with office at Danville, and P. S. Sampson, trainmaster at Brazil, Ind., succeeds Mr. Trenary at Salem. S. S. Huffman, trainmaster at Danville, succeeds Mr. Sampson.

Traffic Officers.

W. D. Judd has been appointed a general agent of the St. Louis & San Francisco, with office at St. Louis, Mo.

E. J. Bryant has been appointed a traveling passenger agent of the New York Central Lines, at Salt Lake City, Utah.

E. G. Baumer has been appointed a traveling freight agent of the Lehigh Valley, with office at South Bethlehem, Pa., succeeding Ira F. Kurtz, resigned.

R. J. Kennedy, traveling freight agent of the Gulf, Colorado

& Santa Fe at Oklahoma City, Okla., has been appointed colonization agent, with office at Galveston, Tex.

W. K. Sanderson, general freight agent, and H. D. Waldron, general passenger agent of the Maine Central, have had their jurisdiction extended over the Portland Terminal Co., both with offices at Portland, Me.

G. M. Riley, traveling freight agent of the Kansas City Southern, has been appointed general agent, with office at Houston, Tex., succeeding E. E. Elmore, resigned. Henry Moran succeeds Mr. Riley.

A. F. Cleveland, general agent of the Chicago & North Western at Cleveland, Ohio, has been appointed general agent, with office at Pittsburgh, Pa., succeeding O. N. Brown, retired. A. R. Gould succeeds Mr. Cleveland.

G. H. MacRae, assistant general passenger agent of the Chicago, St. Paul, Minneapolis & Omaha at St. Paul, Minn., has been appointed general passenger and ticket agent, with office at St. Paul, succeeding T. W. Teasdale, retired.

J. B. Convery, commercial agent of the Illinois Central at Evansville, Ind., has been appointed commercial agent, with office at Houston, Tex. L. W. Hazelton, contracting freight agent at Memphis, Tenn., succeeds Mr. Convery.

Louis N. Snyder has been appointed a traveling passenger agent of the Chicago Great Western, with office at San Francisco, Cal., and G. G. Fraser, district passenger agent, at San Francisco, has resigned to go into other business.

P. C. Patterson, commercial agent of the Mobile & Ohio, at New Orleans, La., has been appointed eastern freight agent, with office at New York. W. B. Ross, soliciting freight agent, at Jacksonville, Fla., succeeds Mr. Patterson, and J. E. Phipps, chief clerk to the commercial agent, at Jacksonville, succeeds Mr. Ross.

Thomas Judd has been appointed district passenger agent of the Chicago Great Western, with office at Des Moines, Iowa, succeeding Harry O. Post, appointed city passenger agent. Louis N. Snyder has been appointed traveling passenger agent, with office at San Francisco, Cal., and G. G. Fraser, district passenger agent at San Francisco, has resigned to engage in other business.

David Cardwell, whose appointment as assistant general freight agent of the Southern Railway, with office at Columbia, S. C., has been announced in these columns, was born February 22, 1846, at Richmond, Va., and was educated in the common schools. He began railway work January 8, 1869, with the Columbia & Augusta, now a part of the Southern Railway, as a clerk for the superintendent, and was later general clerk of the Richmond & Petersburg, now a part of the Atlantic Coast Line, at Richmond. He was then consecutively revenue clerk in the auditor's office of the Charlotte, Columbus & Augusta, now a part of the Southern Railway; manager of the clearing house for the Atlantic Coast Line, and then chief clerk to the general freight and passenger agent of that road. His next position was assistant general freight and passenger agent of the Richmond & Danville, now a part of the Southern Railway, and he was subsequently appointed division freight agent of the Southern Railway, which position he held until his recent appointment as above noted.

Engineering and Rolling Stock Officers.

F. E. Whitcomb, engineer maintenance of signals of the Boston & Albany, has been appointed signal engineer, with office at Boston, Mass., and his former position has been abolished.

B. Violett, roadmaster of the Chicago, Burlington & Quincy, at Jacksonville, Ill., has been transferred to the Beardstown division. J. A. Sullivan, roadmaster at St. Louis, Mo., succeeds Mr. Violett

J. W. Small, superintendent of machinery of the Kansas City Southern at Pittsburg, Kan., has been appointed superintendent of machinery of the Missouri Pacific, with office at St. Louis Mo., succeeding G. W. Smith, resigned.

J. W. Blakeburn, road foreman of engines of the St. Louis Southwestern, at Pine Bluff, Ark., has been appointed master mechanic, with office at Pine Bluff, succeeding E. English, resigned. E. H. McFadden succeeds Mr. Blakeburn.

T. L. Dunn, chief engineer; G. F. Black, engineer maintenance of way; P. M. Hammett, superintendent of motive power, and A. R. Manderson, assistant superintendent of motive power, of the Maine Central, have had their jurisdiction extended over the Portland Terminal Co., all with offices at Portland, Me.

J. T. Robinson, whose appointment as master mechanic of the Missouri Pacific, with office at Osawatomie, Kan., has been announced in these columns, was born in Virginia and received a common school education. He was with the Southern Railway for 15 years as general foreman and master mechanic, with headquarters at different points, and for the past seven years has been master mechanic of the Seaboard Air Line, first at Savannah, Ga., and then at Jacksonville, Fla., which office he held until May, 1911. Effective June 14, he was appointed master mechanic of the Central Kansas division of the Missouri Pacific.

T. N. Ely, chief of motive power of the Pennsylvania lines, both east and west of Pittsburgh, will retire from railway work on July 1, and his position will be abolished. A. W. Gibbs, general superintendent of motive power of lines east of Pittsburgh, has been appointed chief mechanical engineer, succeeding to the duties of Mr. Ely. R. N. Durborow, superintendent of motive power of the Eastern Pennsylvania division, at Altoona, Pa., has been appointed general superintendent motive power of lines east of Pittsburgh and Erie. Robert K. Reading, superintendent of motive power of the Buffalo & Allegheny Valley division at Buffalo, N. Y., succeeds Mr. Durborow, and William Elmer, Jr., master mechanic of the Pittsburgh division, succeeds Mr. Reading.

A. B. Corthell, M. Am. Soc. C. E., who has been connected with the construction work of the Grand Central Terminal, New York, since its beginning in 1902, first as terminal engineer, then as assistant executive of Grand Central station architects, and lately as consulting engineer and secretary of the auxiliary facilities committee, has been appointed chief engineer of the Boston & Maine, with headquarters at Boston, Mass., succeeding J. P. Snow resigned. He will have charge of construction, maintenance of way, maintenance of signals and maintenance of bridges and buildings; and is also consulting engineer of the New York, New Haven & Hartford R. R., reporting to E. H. McHenry, vice-president of the Boston & Maine and vice-president of the New York, New Haven & Hartford R. R.

Andrew Gibson, who has been appointed engineer maintenance of way of the Northern Pacific, with office at St. Paul, Minn., as was previously announced in these columns, was born June 16, 1860, at Ross-shire, Scotland. He was educated in the common schools and at Tain Royal Academy in Scotland, and began railway work with the Northern Pacific in 1883 as a chainman on construction. He was then consecutively rodman, leveler, transitman, and for more than 11 years from October, 1888, he was assistant engineer, having been in charge of masonry work on the Stampede tunnel of the Pacific division, of branch line construction in Clark's Fork Valley in Montana, and of the Clearwater Short Line in Idaho, of branch line construction in Washington and of the docks at Seattle. In April, 1902, he was appointed superintendent of the Yellowstone division, and three years later was transferred to the Rocky Mountain division, where he remained until August, 1907. He was then placed in charge of timber preservation and tie treating plants at Missoula, Mont., from which position he has just been advanced as above.

Purchasing Officers.

Louis Mathiasmier has been appointed division storekeeper of the Atchison, Topeka & Santa Fe, with office at Emporia, Kan., succeeding C. P. Decker.

H. A. Fabian, manager of purchases and supplies of the Maine Central, at Boston, Mass., and C. D. Barrows, purchasing agent, at Portland, Me., have had their jurisdiction extended over the Portland Terminal Co., both with offices at Portland.

OBITUARY.

Clarence A. Knight, president of the Chicago & Oak Park Elevated Railroad at Chicago, died at that city on June 21.

D. R. G. Glascock, assistant engineer of the Public Belt Railroad of New Orleans, La., died at New Orleans on June 22.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

The Atchison, Topeka & Santa Fe has ordered 81 locomotives from the Baldwin Locomotive Works.

The Kansas City & Memphis has ordered 1 ten-wheel locomotive from the American Locomotive Company. The dimensions of the cylinders will be 18 in. x 24 in.; diameter of the driving wheels will be 56 in., and the total weight in working order will be 134,000 lbs.

The St. Louis National Stock Yards has ordered 1 six-wheel switching locomotive from the American Locomotive Company. The dimensions of the cylinders will be 19 in. x 24 in.; diameter of the driving wheels will be 51 in., and the total weight in working order will be 121,000 lbs.

CAR BUILDING.

The Erie Railroad is in the market for 3,300 gondola cars and for 25 passenger cars.

The Illinois Central is taking prices on about 2,000 freight cars.

The Cambria & Indiana, Philadelphia, Pa., has ordered 200 all-steel 50-ton hopper cars from the Cambria Steel Company.

The Grand Trunk, mentioned in the *Railway Age Gazette* of May 12 as being in the market for 1,000 box cars, has ordered this equipment from the Canadian Car & Foundry Company.

The New York Central Lines, mentioned in the *Railway Age Gazette* of April 28 as being in the market for 7 coaches, has ordered this equipment from the American Car & Foundry Company.

IRON AND STEEL.

The Great Northern has ordered 10,000 tons of rails from the Illinois Steel Company.

The Baltimore & Ohio has ordered 4,000 tons of bridge material from the American Bridge Company.

The Lehigh & New England has ordered 400 tons of bridge material from the American Bridge Company.

The Pittsburg & Lake Erie has ordered 1,500 tons of bridge material from the American Bridge Company.

The Atlantic Coast Line has ordered 2,000 tons of structural steel for the bridge at Altamaha, Ga., from the McClintic-Marshall Construction Company.

General Conditions in Steel.—The past week has witnessed a transformation in the steel industry. Confidence on the part of both consumers and producers is at last restored and the price situation is now thoroughly stable. New orders are coming in from an unusually large number of sources and the railways are buying heavily but quietly, especially structural steel. The Steel Corporation is booking orders at the rate of over 30,000 tons a day, and is operating at about 68 per cent. of its capacity.

The Ministers of Finance and Ways of Communications of Russia are submitting to the Council of Ministers the project of P. A. Lipskim and A. V. Bieloff to construct an electric line from Moscow to Sergieff, with branches to Lossino-ostroffsky, Muitischtcham and Puschkino on the northern lines. The total length is put at 42 miles and the cost at $5,204,940. It is proposed to issue $1,440,000 in shares and $4,920,000 in 5 per cent. non-guaranteed debentures. Another electric line which has made similar official progress is the G. K. Uschkoff line, from Sebastopol via Yalta to Aluschta, with branch to Balaklava; estimated cost $16,890,000, and the proposed capital issues are $3,540,000 in shares; and $17,700,000 in non-guaranteed debentures.

Supply Trade News.

The Isthmian Canal Commission will receive bids until July 11 on brass bolts, nuts and set screws. Circular No. 636-D.

The Indian Refining Company, New York, will move its general offices, about July 1, from 133 William street to 17 Battery place.

J. M. Betton, New York, manufacturer of Drucklieb injector sand blast apparatus, will move about July 15 from 178 Washington street to 14 Park place.

The Pennsylvania Equipment Company, Philadelphia, Pa., is in the market for from 5 to 10 second hand standard gage Western Wheeled Scraper Company steel lined dump cars.

The McKeen Motor Car Company, Omaha, Neb., has received an order from the Oregon Short Line for four 70-ft. motor cars to be operated between Ogden, Utah, and Salt Lake City. There are now 113 of these cars in daily service in the United States.

The Mulconroy Company, Philadelphia, Pa., has bought all the patents, stock, machinery and business of the Metallic Flexible Tubing Company, Philadelphia. The name and registered brands of the Metallic Flexible Tubing Company will be continued, but the products will be made in a more centrally located factory with improved and additional machinery.

Col. Henry G. Prout, vice-president and general manager of the Union Switch & Signal Company, Swissdale, Pa., and formerly, for 16 years, 1887-1903, editor-in-chief of the *Railroad Gazette*, received this week from the University of Michigan the honorary degree of Doctor of Laws. Colonel Prout graduated from the University of Michigan in 1871, with the degree of C. E., and in 1902 received from Yale the honorary degree of Master of Arts.

The Davis-Bournonville Acetylene Development Company, New York, and the National Pneumatic Company, Chicago, have made the Davis-Bournonville Company, New York, their exclusive selling agent for welding and cutting apparatus, and have increased its working capital and executive ability. The business of the Davis-Bournonville Company will be divided into the eastern department, with offices in its present quarters in New York, and the western department, with offices at 515 Laflin stret, Chicago, the present quarters of the Chicago welding department of the National Pneumatic Company.

The Jones & Laughlin Steel Company, Pittsburgh, Pa., will on July 1 open its own office in the Penobscot building, Detroit, Mich. It has been represented in Detroit heretofore by F. A. Goodrich & Co. Frederick H. Holt, now in charge of the office of F. A. Goodrich & Co., will be district sales manager in Detroit. The Jones & Laughlin company will also open its own office in the Pierce building, St. Louis, Mo., where the F. A. Goodrich Iron & Steel Company has been representing it. E. D. Batchelor, now in the sales department of the general offices of the Jones & Laughlin company, will be district sales manager in St. Louis. A. C. Pollock, in the sales department of the general offices, has been put in charge of the newly established Pittsburgh sales district.

The American Mason Safety Tread Company, Boston, Mass., has shipped to the American Car & Foundry Company, New York, at its Jeffersonville, Ind., shops red Car Karbolith surfacing material for 19,500 sq. ft., and Car Karbolith for 21,000 sq. ft. for new passenger coaches for the Baltimore & Ohio. The same company is shipping to Pressed Steel Car Company, Pittsburgh, Pa., McKees Rocks plant, Car Karbolith for flooring 25 postal cars for the New York Central; also 17,760 sq. ft. of red Karbolith for passenger coaches, and 2,280 sq. ft. of Karbolith for table tops. The Illinois Central freight warehouse at New Orleans, La., will have some Karbolith flooring laid by this company. The Interborough Rapid Transit Company, New York, has recently received several consignments of Karborundum Karbolith surfacing material. The Delaware, Lackawanna & Western uses the lead filled Mason Safety tread on its concrete steps. This product was used in the station at Taylor, Pa., and about 1,400 sq. ft. of it was used at the station at Bloomfield, N. J. The New York Central is installing car-

borundum filled Mason Safety tread at its stations. Shipments have recently been made to Tuckahoe, N. Y.; Tarrytown, Rochester, Spuyten Duyvil, Dobbs Ferry, Melrose Junction, and other points on the line.

William Richard Brixey, founder of the Kerite Insulated Wire & Cable Company, died at Seymour, Conn., on June 9. He was born at Southampton, Eng., May 11, 1851. He was educated at a grammar school and then entered the British mercantile marine in command of his own ship. He came to this country in 1878, became at once an American citizen, and went into business with his brother-in-law, A. G. Day, a pioneer in the American rubber industry and inventor of Kerite. The Day plant was at Seymour, Conn., and there Mr. Brixey became general manager on the death of Mr. Day, and sole proprietor upon the death of his sister, Mrs. Day. Mr. Brixey was not satisfied with the use of his cables in the telegraph and telephone field, or with the early endorsement of such men as Morse, but pushed out into larger developments in other fields. Some of the most noteworthy of these included the supplying and laying of the Alaskan cable, the furnishing of the Panama zone cable, and the furnishing of the wires and cables for the Pennsylvania tunnels and terminal in New York. In 1908 Mr. Brixey incorporated the business as a company, and soon after retired, leaving it to the management of his eldest son, Richard D. Brixey, president of the Kerite Insulated Wire & Cable Company. Mr. Brixey left two other sons, Reginald W. Brixey, vice-president, and Austin D. Brixey, secretary of the company. Mr. Brixey was active in public life, being a member of the American Institute of Electrical Engineers, and a member for many years of the Old Guard of New York City, with the rank of captain. He was a member of the Brooklyn Club and a high degree Mason.

W. R. Brixey.

The annual report of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., for the fiscal year ended March 31, 1911, shows that that year was the most prosperous in the history of the company, both in gross earnings and in net income. The gross earnings were $38,119,312, as compared with $29,248,682 in 1910, and $33,026,240 in 1907, the previous high record. The net manufacturing profits were $5,608,765, as compared with $3,552,978 in 1910, and $4,179,575 in 1907. The property and plant depreciations charged against income were $371,668. The net income, or surplus for the year, was $4,881,105, as compared with $3,060,664 in 1910, the previous high water mark. The types of apparatus which were particularly developed and improved during the year include alternating and direct current mill and crane motors, high speed turbo-generators and railway equipment. Additional real estate was acquired adjoining the Newark plant and an extension is now under construction which when completed will cover the entire city square and increase the manufacturing floor space by about 30 per cent. The directors of the company feel that the outcome of the pending suit for the alleged violation of the Sherman anti-trust law will not seriously affect the company's lamp business. Last year was not only the most prosperous year for the Westinghouse company, but sets the high record for electrical development throughout the country. This will be more fully realized after an examination of the reports of the General Electric Company, Schenectady, N. Y., and of the Western Electric Company, Chicago. Though last year witnessed such marked success, this year shows no great promise, according to the report. One of the statements of Robert Mather, the chairman, is that "the business taken by the company during February and March, 1911—the last two months of the fiscal year covered by this report—was somewhat less than that taken during the same months of 1910, and the value of the orders booked since the close of the fiscal year does not compare favorably with that of the corresponding period a year ago." On March 31, 1911, the value of unfilled orders was $7,616,058, as compared with $11,256,196 on March 31, 1910. A further reason for expecting a curtailment of earnings is the expiration of the agreement with the General Electric Company whereby each company could use the patents of the other upon payment of royalties and from which the Westinghouse company derived a substantial revenue.

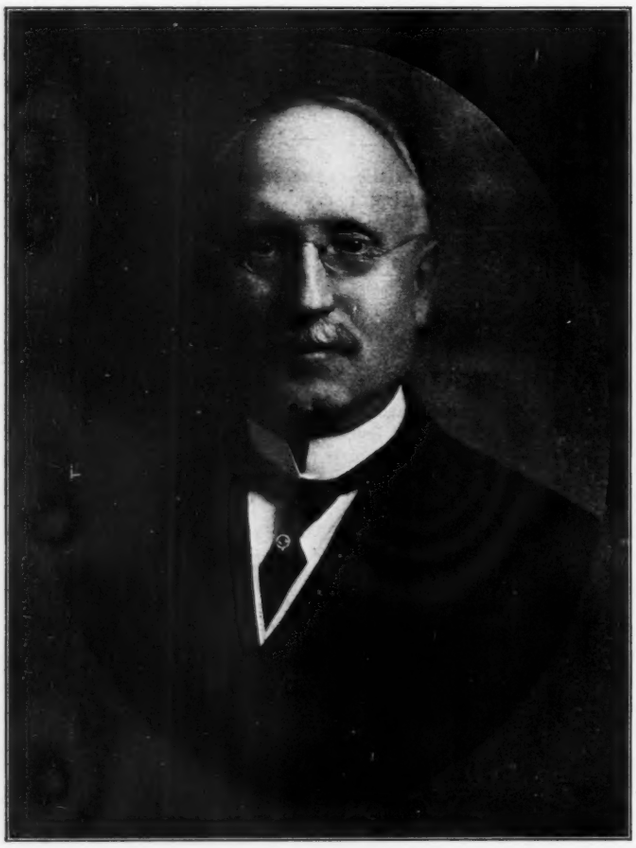
Baldwin Locomotive Works' Reorganization.

The details of the reorganization of the Baldwin Locomotive Works, Philadelphia, Pa., have been completed. William L. Austin, formerly president, has been elected chairman of the board; Alba B. Johnson, president, and Samuel M. Vauclain, vice-president. William Burnham is president of the Standard Steel Works Company. The Baldwin company was incorporated in 1909 to take over the business of the co-partnership, Burnham, Williams & Company, which owned and operated the plant since its beginning in 1832. The new company sold at a premium to its bankers $20,000,000 preferred stock and issued $20,000,000 common stock, a majority of which was issued to the officers and managers of the former company and a minority to the bankers. The officers and managers, therefore, of the former company retained control of the new company, received a certain amount of cash for the equity which they relinquished, and in addition bought back for cash from the bankers $5,900,000 preferred stock of the new company. The new company also bought back from the bankers a certain amount of the preferred and common stock to be used in a profit-sharing plan for its employees.

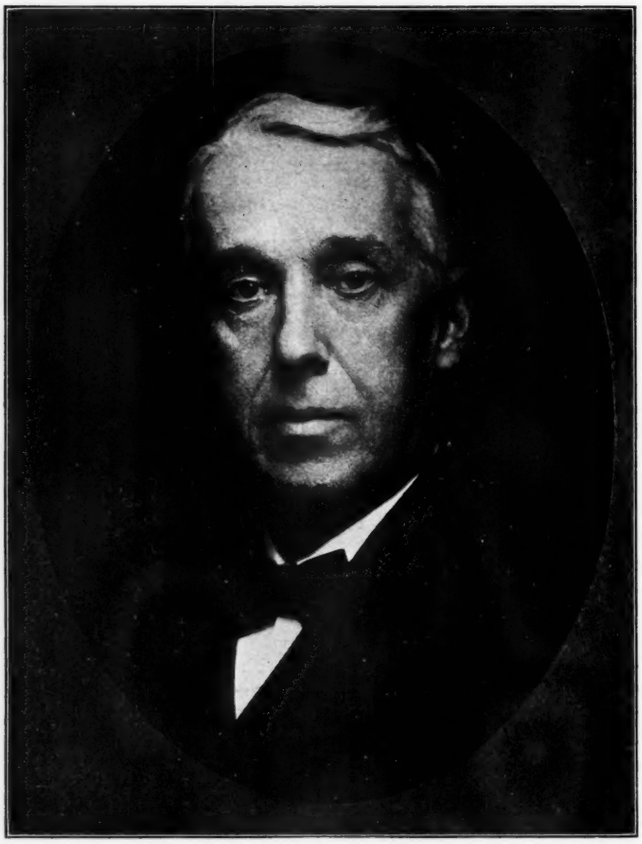
The new president, Mr. Johnson, has been responsible, with Mr. Vauclain, for the extension of the plant and business of the works during the last 10 years. As a partner, and later as vice-president and treasurer of the company, he did much of the administrative work, relieving Mr. Converse, who for some time prior to his death in May, 1910, gave but little attention to the affairs of the concern. Also, Mr. Johnson has been in direct charge of sales, and his work there is what has made the development of the company possible. He combines the technique of good salesmanship with a character which wins respect, and a disposition which makes friends at first sight. The list of institutions and clubs with which he is identified indicates his good citizenship and his personal popularity. He was born in Pittsburgh, Pa., in 1858. He went to school in Philadelphia, graduating from high school in 1876. He received an honorary degree of LL.D. from Ursinus College in 1909. He went into the Baldwin works as junior clerk the year after he left high school. In 1878 and 1879 he worked in the Edge Moor Iron Works, Wilmington, Del., and then returned to the Baldwin works. He was admitted to partnership in the firm of Burnham, Williams & Company in 1896 and was made vice-president and treasurer of the successor company in 1909. He is a director of the Standard Steel Works Company, the Fourth Street National Bank, the Pennsylvania Company for Insurance on Lives and Granting Annuities, the Philadelphia National Bank, the Railway Business Association, the National Tariff Commission Association, the Young Men's Christian Association and the Executive Council, Philadelphia Board of Trade. He is a trustee of the Jefferson Medical College and Hospital, and a member of the American Philosophical Society, the American Academy of Political & Social Science, the American Railway Master Mechanics' Association, the National Board of Trade, the New York Chamber of Commerce, the National Association of Manufacturers, the Fairmount Park Art Association, the Geographical Society of Philadelphia (president, 1907-1909), the Historical Society of Pennsylvania and the Pennsylvania Society of Sons of the Revolution. He is also a member of the following clubs: Union League, Manufacturers', City (Philadelphia), Contemporary, Five O'clock, Merion Cricket (Haverford, Pa.), Railroad (New York). He was president of the Presbyterian Social Union of Philadelphia, 1906-1907.

As has been mentioned, Mr. Vauclain shares with Mr. Johnson the credit for the recent growth of the locomotive works. He has contributed to the organization his ability as a shop

organizer and manager, and his ingenuity and progressiveness as a locomotive designer. He has steadily increased the output of the works, designing physical extensions to the plant and being quick to improve methods and put in new machinery where needed. His results have been more spectacular than his methods. It was by taking advantage of every opportunity and not by any revolutionary reorganization that he brought the plant up to the seemingly impossible output of a locomotive an hour. Mr. Vauclain was born in Philadelphia in 1856, being French on his father's side and Scotch and German on his mother's. His father's people were killed in the French Revolution. Mr. Vauclain, Sr., worked for Mr. Baldwin from the building of the Ironsides until 1856, when he went to the Pennsylvania Railroad. Mr. Vauclain claims that his own apprenticeship began when he was three years old, when he lent his presence at a test of the first Gifford injector tried on the Pennsylvania Railroad. Officially, his apprenticeship was not begun until 1873, after a public school education and some preliminary apprentice work in the shops. In 1882 he represented the Pennsylvania Railroad at the Baldwin plant in charge of an order for 60 new locomotives. The next year he went to the Baldwin works as foreman of one of the departments. In 1885 he was made superintendent of equipment and in 1886 general superintendent, which position he has held since. Like Mr. Johnson, Mr. Vauclain is a member of many clubs and societies, including the Institute of Civil Engineers, the American Society of Mechanical Engineers, the American Society of Mining Engineers and the American Philosophical Society. He has the honorary degree of Doctor of Science, conferred on him by the University of Pennsylvania.



Alba B. Johnson.



Samuel M. Vauclain.

The Baldwin Locomotive Works was incorporated in June, 1911, under the laws of Pennsylvania, having taken over all of the stock of the Baldwin Locomotive Works organized under the Pennsylvania laws in 1909, which company, beside the plant and property of the predecessor co-partnership, owns the entire capital stock of the Standard Steel Works Company. Drexel & Co., Philadelphia, and White, Weld & Co., New York, are offering $20,000,000 7 per cent. cumulative preferred stock of the new company at 104. This is the total authorized and outstanding preferred stock, and there is in addition $20,000,000 authorized and outstanding common stock. The board of directors is composed of William L. Austin, chairman; Alba B. Johnson, president; Samuel M. Vauclain, vice-president; Wiliam Burnham, president of the Standard Steel Works Company; E. T. Stokesbury, of Drexel & Co.; E. C. Converse, president of the Bankers Trust Company, New York; Thomas DeWitt Cuyler, lawyer; Roland L. Taylor, president of the Philadelphia Trust, Safe Deposit and Insurance Company; Samuel McRoberts, vice-president of the National City Bank, New York; Charles D. Norton, vice-president of the First National Bank, New York; Otis H. Cutler, president of the American Brake Shoe & Foundry Company, and Francis M. Weld, of White, Weld & Co.

The new company is to take over all of the plant and property, including the capital stock of the Standard Steel Works Company, of the older Baldwin Locomotive Works, subject to a first mortgage securing an authorized issue of $15,000,000 5 per cent. sinking fund bonds of May 1, 1910-1940, of which $10,000,000 are now outstanding. The property of the Standard Steel Works Company is subject to a first mortgage securing an authorized issue of $5,000,000 5 per cent. sinking fund bonds, due June 1, 1928, of which $4,300,000 are outstanding and $600,000 have been retired under the sinking fund plan.

The gross sales in 1910 of the Baldwin Locomotive Works amounted to $29,057,999, and of the Standard Steel Works Company to $6,241,845. The average yearly gross sales for the last 10 years of the Baldwin works amounted to $26,285,883, and of the Standard Steel to $4,406,500. The combined income statement of the two companies for the year ended December 31, 1910, showed net earnings of $5,295,132. After the payment of taxes, bond discount and $1,221,425 maintenance and depreciation, and all interest charges and sinking fund against the Standard Steel Works Company bonds, there was a balance available for dividends of $2,706,080. The preferred stock has full voting power and is preferred as to both assets and dividends.

TRADE PUBLICATIONS.

VALVE GEAR.—The Pilliod Brothers Company, Toledo, Ohio, has issued an illustrated catalog presenting in detail a description of the Pilliod gear.

GRAB BUCKETS.—The C. W. Hunt Company, New York, has published catalog No. 14, describing its grab buckets, coal tubs, valves, chutes, screens, hoisting machinery, etc. Tables and illustrations are included.

ELECTRICAL EQUIPMENT.—The General Electric Company, Schenectady, N. Y., has devoted bulletin No. 4851 to the descriptions and illustrations of electric station and road equipment of several prominent roads.

WATER TANKS AND SWITCH STANDS.—The U. S. Wind Engine & Pump Company, Batavia, Ill., has issued its railway catalog No. 17, describing water tanks, water columns, special locomotive watering devices, pumping machinery, switch stands and semaphores.

OXY-ACETYLENE WELDING.—The Linde Air Products Company, Buffalo, N. Y., has published a very full catalog on acetylene generators, blow pipe regulators and blow pipes for oxy-acetylene welding. The many advantages of this process are clearly enumerated.

STEEL TIRES.—The Standard Steel Works Company, Philadelphia, Pa., has issued a pithy little booklet on steel tires, giving in detail the specifications which were adopted by the American Society for Testing Materials. Illustrations, diagrams and a dimension blank for orders are included.

CHAIN BELTS.—The Chain Belt Company, Milwaukee, Wis., has published catalog No. 40, illustrating and describing many types of chain belts, conveying devices and their accessories. It is bound in cloth, contains over 275 pages, and includes directions for ordering, photographs of installations and list prices.

CHICAGO GREAT WESTERN.—The Tale of Our Limited, a booklet just issued by the passenger department of the Chicago Great Western, gives a detailed description of the Great Western Limited between Chicago, St. Paul and Minneapolis. It also contains interior views of the cars and several condensed time tables.

DENVER & RIO GRANDE.—The passenger department of this line has issued a booklet entitled Camping in the Rockies, written by Edwin L. Sabin, and giving information regarding the most desirable camping places in Colorado, Utah and New Mexico. In connection with this there is given a very complete list of vacation estimates.

CREOSOTED MATERIALS.—The Wyckoff Pipe & Creosoted Company, New York, has published a small illustrated booklet which goes rather deeply into the subject of wood preservation, particularly by the use of creosote oil. The booklet then tells of the advantages of materials after they have been creosoted. Some of the various products of the company are then described, including creosoted cross arms, wood conduits, ties, etc.

The Hongkong section of the Kowloon-Canton Railway—the line that is to link Hongkong with the Canton-Hankow road, and thus connect the colony with the great interior of China, whose trade in foreign goods going in and in native goods coming out for shipment abroad is now handled almost altogether by water—has been in operation for a portion of a year, and authoritative figures for the cost of the railway as well as its prospects are to be had. The financial returns of the undertaking as well as the railway itself are of especial interest, in that they represent the construction by a colony of about 325,000 population of one of the most expensive transportation systems in the world in proportion to its length, as a public enterprise for the purpose of protecting the colony's trade. The railway consists of 21 miles of track running from Kowloon, the mainland portion of the colony, to the limit of British territory, where it is to connect with the Chinese section and continue on to Canton, some 89 miles farther. The British line was opened in October, 1910; the Chinese section is expected to be ready for traffic in August, 1911.

Railway Construction.

New Incorporations, Surveys, Etc.

ALGOMA CENTRAL & HUDSON BAY.—Bids are wanted up to July 15 by R. S. McCormick, chief engineer, Sault Ste. Marie, Ont., for building an extension from Hobon, on the Canadian Pacific, northerly for 101 miles to the National Trancontinental (Grand Trunk Pacific) at a point about 142 miles west of Cochrane.

ATCHISON, TOPEKA & SANTA FE.—A contract has been given to the H. Houser Contracting Company, Los Angeles, Cal., it is said, for excavation and grading new terminal yards at Calwa, Cal., which is about 100 miles from Riverbank.

BARTLETT-FLORENCE.—See Bartlett Western.

BARTLETT WESTERN.—Organized in Texas to take over the Bartlett-Florence, operating a 11-mile line from Bartlett, Tex., west to Jarrell. It is the intention of the new company to extend the line west to Florence, 12 miles. The general offices of the company are at Bartlett. J. W. Jackson, president, and C. J. Grainger, vice-president and general manager.

BIRMINGHAM & SOUTHEASTERN.—This company has made a mortgage to secure funds for building an extension. The projected route is from Fort Davis, Ala., to Rockford, 58 miles, of which 20 miles to Milstead is mostly completed.

BOSTON & ALBANY.—An officer writes that plans have been made to change the alinement of tracks in Becket, Mass., and Middlefield, so as to shift the tracks on a section of over two miles. In some cases the tracks will be moved about 1,000 ft. The improvements are being carried out to do away with two stone arches which now span Westfield river. A third track will also be laid throughout the two-mile stretch.

BOSTON & EASTERN (Electric) —The governor of Massachusetts has signed the bill granting this company a certificate of exigency, and it is understood that construction work will be started soon. The projected route is from Beverly, Mass., to Boston, 41 miles, with a tunnel under Boston harbor. John M. Bickford is the promoting engineer. Arthur Sturger, 110 State street, Boston, may be addressed.

BRUCE MINES & ALGOMA.—An officer writes that this company, which operates a 17-mile line from Bruce Mines, Ont., on Lake Huron, to Rock Lake, proposes to extend the line northerly and easterly through a timber section to the National Transcontinental (Grand Trunk Pacific). Surveys have not yet been finished. There will be some improvements made, including new docks and terminal facilities. The line is to be built to carry timber, ore, and later on farm products. George P. McCallum, president, Sault Ste. Marie, Mich.

CALIFORNIA ROADS.—The Leonard Company, Sacramento, Cal., will build a line, it is said, from Del Paso, near Sacramento, east to Fairoaks and Orangevale, 17 miles. The company has a capital of $250,000.

CANADIAN NORTHERN ONTARIO.—Ewan Mackenzie, Toronto, Ont., who was given the general contract for grading and timber work on the Toronto-Ottawa line between Mile 180 and Mile 200, has sublet some of the work as follows: To P. W. MacLean, Brechin, 2.75 miles; Paul Allan, Chaffie's Lock, 0.5 miles; L. MacLean and R. MacIsaac, Brechin, 1.25 miles; D. J. O'Donnell, Toronto; A. O'Donnell, Beaverton, and S. Mackenzie, Elgin, 4 miles; Stewart & Hart, Portland, 4 miles, and C. A. Cook, Brechin, 4 miles. (June 2, p. 1296.)

CANADIAN PACIFIC.—An officer writes that contracts have been given to J. G. Hargrave & Co., Winnipeg, Man., to build 20 miles, and to John Timothy, Edmonton, Alb., for an additional 20 miles, of a branch to be built from Bassano, Alb.

CHOUTEAU & GREAT FALLS.—This company has asked for incorporation in Montana with $100,000 capital, to build about 55 miles of line. The proposed route is between Great Falls, Mont., and Chouteau. The prospects of building the line are good, but contracts are not yet let. There will be one steel bridge and one important trestle. Phil I. Cole, Chouteau, may be addressed.

CLINTON & OKLAHOMA WESTERN.—This company is planning to build an extension, it is said, from Butler, Okla., north to a

connection with the Atchison, Topeka & Santa Fe, at Woodward. The company also has under consideration the question of building an extension west from Butler, through Cheyenne, into Texas.

Davenport & Muscatine (Electric).—An officer writes that contracts have been let to Yale & Regan, Chicago, to build west from Davenport, Iowa, to Muscatine. The Tri-City Railway & Light Company is financing the project.

Erie Railroad.—Work on the Sharon & New Castle division of the Erie Railroad will be started within the next few weeks. The work will be carried out by the Erie Railroad, it is said, and the tracks will be used also by the Pittsburgh & Lake Erie. The Erie agrees to double-track the entire route, which will be over 30 miles. The Pittsburgh & Lake Erie proposes to put up a new station at New Castle. Both these companies are now putting up a large freight station at Sharon, to be used jointly by both roads.

El Paso & Southwestern.—According to press reports, plans are being made to build several important extensions in Arizona and New Mexico. It is understood that the route has been located and contract for the construction work will soon be let for an extension from Benson, Ariz., to Tucson. This line is eventually to be extended to Phoenix. In addition, plans are said to be made to build from El Paso, Tex., up the valley of the Rio Grande to the site of the Elephant Butte dam, and it is expected to have this line finished by the time the government and reclamation project is completed. (May 5, p. 1084.)

Eureka & Palisade.—See this company in Railway Financial News.

Fresno, Coalinga & Monterey (Electric).—An officer writes that this company proposes to build from Fresno, Cal., southwest to Coalinga, 50 miles, and from Coalinga northwest through San Benito county to Hollister, thence west via San Juan and Salinas to the harbor of Monterery, where the government will put up a large breakwater. It is expected that construction work will be started in the near future. Work on the line from Fresno to Coalinga will be very easy, as it is over level plains. There will be several fills across the slough country, with a small cut near Coalinga. Between Coalinga and Hollister there will be about 40 creek crossings. Steel bridges are to be built over the San Benito river and the Salinas river. The line is being built to carry oil, provisions, grain, hay, dairy products, fruit and quicksilver from the mines. T. C. White, president; J. S. Bates, chief engineer, Fresno.

Gilmore & Pittsburgh.—Work will be started soon, it is said, on an extension from Salmon City, Idaho, northwest towards Lewiston.

Hamilton Railway.—Incorporated in Illinois to build from a point on the bridge over the Mississippi river between Hamilton, Ill., and Keokuk, Iowa, to the cities of Hamilton, and Warsaw, in Hancock county, Ill. The headquarters of the company are at Chicago, and the incorporators include: G. Higginson, Jr., Winnetka; J. D. Harvey, Geneva; J. L. Valentine and H. Wells, Chicago, and A. W. O'Hara, Carthage.

Hobart, Cheyenne & Texas Pan Handle.—Incorporated in Oklahoma with $6,000,000 capital, to build from Hobart, Okla., northwest through Cheyenne, across the Texas Panhandle into New Mexico. W. L. Hoyl is superintendent.

Kentucky & Tennessee State Line.—Incorporated in Tennessee with $80,000 capital, and office at Hazel, Ky. The plans call for building a line from the Tennessee river, west along the Kentucky-Tennessee state line, via Hazel to the Mississippi river, about 80 miles. The incorporators include J. N. Hill, W. T. Jackson, C. V. Campbell, J. W. Williams and J. T. Turnbow.

Kokomo, Frankfort & Western Traction.—Organized in Indiana to build from Kokomo, Ind., southwest via West Middleton, Russiaville, Michigantown and Forest to Frankfort, 27 miles. It is intended to have the line finished by January 1, 1912. The offices of the company are at Kokomo. The line is being built by the Kokomo, Marion & Western interests.

Midland Valley.—Track laying has been started on the extension building under the name of the Wichita & Midland Valley, from Arkansas City, Kan., northwest to Wichita, 55 miles. It is expected to have the work finished by the middle of September. M. Tansey, San Saba, Tex., has the grading contract. (April 7, p. 878.)

Missouri, Kansas & Texas.—According to press reports, the 67-mile line from Colmesneil, Tex., west to Trinity, is to be connected with the rest of the system by constructing an extension from Trinity west to Waco, about 125 miles. We are unable to secure official confirmation of this report.

Olympic Peninsula (Electric).—Organized at Seattle, Wash., to build from Lake Crescent, Wash., to a point on Puget sound. David S. Troy, Chimacum, and R. R. Wilson, Seattle, are interested.

Pensacola, Mobile & New Orleans.—An officer writes that this company, which is building from Pensacola, Fla., via Loxley, Ala., to Mobile, has grading work about finished. Track laying is now under way and has been finished on about 11 miles. The line is being built to carry lumber, coal, naval stores, cotton and agricultural products. E. McLaughlin, president, Pensacola.

Pittsburgh & Lake Erie.—See Erie Railroad.

Rock Island, Farwell & Gulf.—An officer writes that this company was organized in Texas to build about 450 miles of railway, from a point on the Rock Island to the San Antonio & Aransas Pass, at Kerrville, Tex. Grading has been finished on 35 miles, and contracts for additional work are to be let at once. Maximum grade will not exceed 1 per cent., and maximum curvature 8 deg. M. J. Healy, president and general manager, Amarillo.

Sand Springs Interurban.—An officer of this company, which recently finished work on a line from Sand Springs, Okla., east to Tulsa, writes regarding the reports that an extension is to be built from Tulsa, northeast to Nowata, 60 miles, that the matter is being taken up with residents along the proposed route who are interested. When the negotiations are completed the extension is to be built. (February 24, p. 369.)

Seattle-Tacoma Short Line (Electric).—This company has been organized and additional capital subscribed. It is understood that the company will soon commence construction work to complete the double-track line between Seattle, Wash., and Tacoma, 30 miles.

Syracuse, Watertown & St. Lawrence River (Electric).—The New York Public Service Commission, Second district, has authorized this company to build an electric line from a point on the Syracuse & South Bay Electric, in the town of Cicero, Onondaga county, N. Y., to Brewerton, on the shore of Oneida lake, 6.33 miles.

Texas, Gulf & Northern.—Incorporated in Texas with $175,000, to build from a point near Bovina, in Parmer county, Tex., on the Pecos & Northern Texas, southerly through Bailey, Cochran, Yoakum, Gaines, Andrews, Ector and Midland counties, to a connection with the Texas & Pacific, at Midland, about 190 miles. The directors include: J. A. Underwood, Honey Grove; J. D. Bedford and R. E. Underwood, Amarillo, and J. F. Sadler, Weatherford.

Texas Roads.—Plans are being made to build from Oakville, Tex., to Kennedy, 30 miles. A bonus of $150,000 has been subscribed and right-of-way donated. A company is soon to be organized to carry out the work. L. A. Whitney, Oakville, is the principal promoter.

Western Maryland.—The extension from Cumberland, Md., to Connellsville, Pa., 87 miles, it is announced, will be finished about August 1, and about two months later the company expects to begin operating through trains to Pittsburgh over the extension and the Pittsburgh & Lake Erie.

Wichita & Midland Valley.—See Midland Valley.

Willamette Pacific.—Incorporated in Oregon with $1,000,000 capital, to build from Eugene, Ore., west to a point on the Pacific coast near Siuslaw river, thence south to Marshfield, with a branch from the main line at Elmira, northeast, and another branch from Swisshome to a point near Junction City. The headquarters of the company are at Portland, and the incorporators include: G. X. Wendling, San Francisco, Cal.; R. M. Cross and S. O. Bodine, Portland, Ore.

RAILWAY STRUCTURES.

ARGO, WASH.—The Oregon-Washington Railroad & Navigation Company has given a contract to the Grant Smith Co., Seattle, Wash., for putting up seven concrete shop buildings at Argo. The contract is said to be worth $300,000.

CAMPBELLTON, N. B.—A contract has been given to Woods & Co., St. Johns, N. B., for putting up a new station for the Intercolonial Railway at Campbellton.

CALGARY, ALB.—The Canadian Pacific, it is understood, will enlarge the station at Calgary. The plans provide for an extension of 300 ft. on the west end, and 65 ft. on the east end. The west wing of the building will be built to within 40 ft. of the new hotel, which will front on Ninth avenue.

COEUR D'ALENE, IDAHO.—The Northern Pacific, it is said, will build a new freight house at Coeur d'Alene.

GLOVIS, N. MEX.—The Atchison, Topeka & Santa Fe has plans made, it is said, for a new employees' building at Clovis, to contain a library, museum and sleeping rooms. The estimated cost of the building is $50,000.

GOODRICH, IDAHO.—The Pacific & Idaho Northern will build a new concrete bridge, it is said, over the Weiser river, between Goodrich and Council.

HALIFAX, N. S.—Bids are wanted up to July 20 by L. K. Jones, secretary of the Department of Railways and Canals, Ottawa, Ont., for the construction of a reinforced concrete pier and sheds at the deepwater terminus of the Intercolonial Railway at Halifax.

LOS ANGELES, CAL.—The Southern Pacific, it is said, will build a hospital at Los Angeles for the use of employees, to cost about $100,000.

NEW CASTLE, PA.—See Erie Railroad under Railway Construction.

OROVILLE, CAL.—The Southern Pacific has started work on a new station at Oroville.

REDDITT, ONT.—Bids are wanted until July 11 for putting up two terminal stations on the National Transcontinental (Grand Trunk Pacific); one at Redditt, Ont., and the other at Transcona, Man. P. E. Ryan, secretary, Ottawa.

REEDLEY, CAL.—The Atchison, Topeka & Santa Fe Coast Lines, it is said, will build a new concrete bridge over Kings river, at Reedley.

RIVERBANK, CAL.—The Atchison, Topeka & Santa Fe Coast Lines has started work on new car shops and a roundhouse at Riverbank.

RUSSELLVILLE, KY.—The Louisville & Nashville has started construction work on a passenger station at Russellville, to cost about $25,000. (June 9, p. 1335.)

SCRANTON, PA.—The York Bridge Company, who has the general contract for building the Mulberry street viaduct in Scranton, has given a sub-contract to W. H. Lyons, Sunbury, for the substructure. This includes the filling work at the Providence road end, the masonry work, abutments, piers, roadway and paving. (May 26, p. 1225.)

SELIGMAN, ARIZ.—The roundhouse of the Atchison, Topeka & Santa Fe was burned on June 10 with an estimated loss of $62,000.

SHARON, PA.—See Erie Railroad under Railway Construction.

SALT LAKE CITY, UTAH.—The Denver & Rio Grande will make alterations, additions and repairs to the Salt Lake shops, at a cost of about $60,000. The shops will be used jointly by the Denver & Rio Grande and the Western Pacific.

TRANSCONA, MAN.—See Redditt, Ont.

TUCSON, ARIZ.—The El Paso & Southwestern is planning to put up a station, freight house and yards at Tucson, it is said, and surveys are being made for an entrance into that city.

WINNIPEG, MAN.—Bids are wanted by P. E. Ryan, secretary of the National Transcontinental (Grand Trunk Pacific), Ottawa, Ont., for putting up car shops at Winnipeg.

Railway Financial News.

ABILENE & SOUTHERN.—This company has applied to the Texas railway commission for authority to register $1,700,000 bonds and $70,000 stock to be issued against 54 miles of line completed from Abilene to Ballinger.

ATLANTA, BIRMINGHAM & SOUTHERN.—Clark, Dodge & Co., and White, Weld & Co., both of New York, are offering to extend or refund for one year the $3,250,000 receivers' certificates due July 1. Holders of these certificates are offered either cash or a one-year renewal.

ATLANTA, WAYCROSS & NORTHERN.—A press despatch from Waycross, Ga., says that this company is to issue $6,200,000 new securities.

BARTLETT-FLORENCE.—See Bartlett Western.

BARTLETT WESTERN.—This is the name of the new company which has been incorporated with $41,000 stock to succeed the Bartlett-Florence. The sale of the Bartlett-Florence for $41,000 has been confirmed.

BIRMINGHAM & SOUTHEASTERN.—The *Commercial & Financial Chronicle* says that this company, which until recently was called the Union Springs & Northern, has arranged to make a new mortgage for $3,000,000 to pay for extension of the road. The road runs from Union Springs, Ala., to Fort Davis, 7½ miles. See this company under Railway Construction.

BOONEVILLE, ST. LOUIS & SOUTHERN.—This road, which has been operated by the Missouri Pacific under a 99-year lease, has been sold to the M. P.

CHICAGO & ALTON.—The directors, at a meeting on June 27, decided to pass the dividend on the preferred stock. The stock has been heretofore on a 4 per cent. annual basis.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—Potter, Choate & Prentice, New York, and the First Trust & Savings Bank, Chicago, have bought the $2,300,000 C. I. & L. refunding (now first) mortgage 4 per cent. bonds reserved to retire the Louisville, New Albany & Chicago-Chicago & Indianapolis division first mortgage 6 per cent. bonds of 1881-1911, amounting to $2,300,000, and the bankers are offering to take the old bonds on a 3 per cent. basis in exchange for the refunding bonds at 94½. This yields about 4.30 per cent. on the investment.

CHICAGO SOUTHERN.—The $11,000,000 Southern Indiana common stock, deposited under the Chicago Southern notes, was bought in at auction for $500 on behalf of the Chicago, Terre Haute & Southeastern, the new company.

CHICAGO, TERRE HAUTE & SOUTHEASTERN.—See Chicago Southern.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—The Guaranty Trust Co., New York, is offering $10,000,000 4½ per cent. 20-year debentures of the C. C. C. & St. L. at 97½. Part of the proceeds of the sale of these notes has been used by the railway company to pay off the $5,000,000 notes which matured June 1.

DELAWARE & EASTERN.—The sale of this road under foreclosure of the mortgage for $1,000,000 has been ordered for August 11 at Margaretville, N. Y.

DETROIT, TOLEDO & IRONTON.—The *Detroit Journal* says that the receiver of the D. T. & I. has asked permission to issue $1,000,000 receiver's certificates to pay operating expenses, etc.

ERIE.—The directors are to authorize the sale of $6,000,000 equipment trust notes to pay for equipment, including sixty locomotives, as well as passenger and freight cars. Of the $6,950,000, total cost of the equipment, $5,750,000 will be spent for the Erie Railroad proper, to be paid for by the issue of $5,000,000 notes and $750,000 cash from the company's current funds. The New York, Susquehanna & Western will be allotted $1,200,000 of the equipment, to be paid for by the sale of $1,000,000 equipment trust notes and by the use of $200,000 cash and current funds.

EUREKA & PALISADE.—In regard to rumors that this property has been sold to the Southern Pacific, an officer writes that

the road was washed out by floods in February and March, 1910, and has not since been operated. The road was sold under foreclosure in November, 1910, to the United States Smelting, Refining & Mining Company. "Before the period of redemption expired, however, it was redeemed by some of its stockholders, and it has not been determined definitely whether to rebuild the line or not."

Frankfort & Cincinnati.—See an item in regard to this company under Court News.

Hocking Valley.—The United States district court at Columbus has vacated the order restraining the Chesapeake & Ohio from voting the Hocking Valley stock. The case has not as yet been fuly tried on its merits, but it is understood that the facts in the case to a large extent came under the district court's notice. It is expected that an appeal will be taken.

Houston Belt & Terminal.—William Salomon & Co., New York, and G. H. Walker & Co., St. Louis, are offering $2,000,000 Houston Belt & Terminal first mortgage 5 per cent. bonds of 1907-1937 at 101. The bonds are secured by a first mortgage on the terminal at Houston, Tex., which is used by the Atchison, Topeka & Santa Fe, the Chicago, Rock Island & Pacific, the Chicago, Burlington & Quincy and the St. Louis & San Francisco. Including the present issue, there are $4,266,000 of these bonds outstanding.

Lehigh & Hudson River.—This company has sold to Drexel & Co., Philadelphia, $945,000 general mortgage 5 per cent. bonds to provide for the payment at maturity, July 1, of $800,000 first mortgage 5 per cent. bonds and $145,000 Warwick Valley first mortgage 4½ per cent. bonds.

Lexington & Eastern.—The $1,000,000 first mortgage 5 per cent. bonds of 1894-July 1, 1911, are to be paid at the office of the Louisville & Nashville, New York.

Louisville & Nashville.—See Lexington & Eastern.

Also see an item in regard to this company under Court News.

Maine Central.—This company has taken over the property and franchises of the Washington County Railway, running from Washington Junction, Me., to Calais, Ayer's Junction to Eastport, and St. Croix Junction to Princeton, a total of 138 miles; the Somerset Railway, running from Oakland, Me., to Kineo Station, 91 miles; and the Sebasticook & Moosehead, running from Pittsfield, Me., to Mainstream, 15 miles. For the new officers see railway officers news column.

See also Portland Terminal Company below.

Michigan Central.—The Detroit terminal and tunnel bonds, of which $16,000,000 were recently taken by a syndicate headed by J. P. Morgan & Co., the First National Bank and the National City Bank, all of New York, were secured by a first mortgage and were presumably legal investments for savings banks in a number of states. Attorneys for the insurance companies pointed out that the expenditure on the Detroit river tunnel had not exceeded $9,000,000, and $3,500,000 had been spent for the union passenger station and $1,500,000 had been spent for improvements so that only $14,000,000 had actually been spent on the property mortgaged to secure the bonds; and since the law provides that "adequate security" must be provided for bonds which are legal investments for savings banks, the court might not consider this "adequate security." A deposit of $2,000,000 cash has been arranged for with the bankers to meet this objection.

Philadelphia & Reading.—See Reading Company.

Philadelphia, Baltimore & Washington.—The $1,500,000 6 per cent. bonds of the Baltimore & Potomac of 1871-1911 are to be paid at maturity.

Pensacola, Mobile & New Orleans.—This company has made a mortgage to secure an authorized issue of $750,000 first mortgage 20-year 5 per cent. bonds.

Portland Terminal Company.—This company has taken over all the railway lines and terminal facilities of the Boston & Maine, the Maine Central, and the Portland Union Railway Station Company in Portland, Me., South Portland and Westbrook.

Reading Company.—All three classes of stock—first preferred, second prefered and common—are to have dividends paid quarterly instead of semi-annually as heretofore.

Seaboard Air Line.—Frank A. Vanderlip, president of the National City Bank, New York, has been elected a director.

Southern Pacific.—See an item in regard to this company in Court News.

Union Pacific.—See an item in regard to this company in Court News.

Wabash-Pittsburgh Terminal.—The Wabash Railroad and the Wabash-Pittsburgh Terminal reorganization committee, according to the *Wall Street Journal,* have agreed on a plan of reorganization of the Wheeling & Lake Erie and the Wabash-Pittsburgh Terminal, under the terms of which the Wabash Railroad is to give up all of its claims against the Terminal Railway, also $14,000,000 Pittsburgh Terminal Railroad & Coal Co. stock and $3,800,000 consolidated mortgage bonds of the same company in return for $1,000,000 adjustment 5 per cent. bonds and $3,200,000 5 per cent. non-cumulative preferred stock to be issued by the reorganized and consolidated Wheeling and Terminal Railway properties. All litigation against the Wabash Railroad is to be suspended. Estimated on the basis at which the new securities will be underwritten under the terms of the plan, the Terminal firsts will have an approximate value of 64.50. Several calculations variously make their value as between 58 and 67. On the same basis the seconds, after deducting an assessment of 25 per cent., figure out at around 6¼. Cash requirements will amount to $20,000,000, to be raised by assessments on the Terminal Railway seconds and all of the Wheeling stock and sale of first mortgage bonds. This will be used to pay off the Wheeling & Lake Erie $8,000,000 notes par and interest, receivers' certificates, current obligations and for improvements and betterments.

Total Wheeling & Lake Erie, Pittsburgh Terminal R. R. & Coal Co. and West Side Belt securities remaining undisturbed amount to approximately $17,000,000, with fixed charges of about $1,000,000. Including interest on the initial issue of first mortgage bonds issued in reorganization, the total annual fixed charges will amount to about $1,800,000 annually. Including interest on the adjustments, charges will amount to about $2,800,000. The properties are now earning surplus available for fixed charges close to $2,500,000. Upon the consolidation of the two properties and with new equipment and facilities it is estimated they could immediately earn $3,500,000 or more than enough to pay the full rate on the adjustment bonds.

Wabash Railroad.—On account of developments in respect to the compromise settlement made by the Wabash Railroad with the Wabash-Pittsburg Terminal Railway and also because of the proposed liquidation of the Pacific Express Company, of which the company's stock 40 per cent. is owned by the Wabash Railroad, a readjustment of the latter's financial arrangements in respect to the $5,000,000 extended 4½ per cent. notes will be made. *The Wall Street Journal* says that officials of the company are considering making a new loan of $5,000,000 and calling the $5,000,000 4½ per cent. notes, recently extended for three years by Blair & Co., and Kuhn, Loeb & Co.

The directors have declared a semi-annual dividend of 1 per cent. on the debenture "B," bonds. This places the "B" bonds on a 2 per cent. annual basis as compared with a 4 per cent. annual basis declared heretofore. Regular semi-annual interest of 3 per cent. was declared on debenture "A" bonds. Only $1,276,000 out of an original issue of $26,500,000 Wabash debenture "B" bonds are outstanding, the remainder having been turned in under the offer of the company to exchange for them 72 per cent. in new extended 4 per cent. bonds and 52 per cent. in Wabash preferred and 52 per cent. in common stock.

See Wabash-Pittsburgh Terminal.

Washington, Potomac & Chesapeake.—This company has asked the Maryland Public Service Commission for authority to increase its stock from $500,000 to $2,000,000, and to make its bonded debt $2,000,00. The road runs from Brandywine, Md., to Mechanicsville, 21 miles.

Wheeling & Lake Erie.—See Wabash-Pittsburgh Terminal.